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USSR
Situation and Outlook Report

CONTENTS

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SUMMARY

The volume of U.S. grain exports to the USSR in calendar 1987 is expected to more than triple 1986's level of 2.7 million tons, all of which was corn. The jump is tied to 4 million tons of wheat sold under the Export Enhancement Program compared with none in 1986. Also, corn contracts are larger, running in early May at a pace 35 percent ahead of last year's total 2.7 million tons.

The value of agricultural exports to the USSR may not show a parallel rise to that for volume because the increased grain shipments could be offset by lower prices and a decline in soybean sales. The Soviets have not bought U.S. soybeans since May 1986 when they completed purchases of 1.5 million tons. They bought no soybeans in 1985.

In 1986, agricultural exports to the USSR fell $1.3 billion to $0.7 billion, a 13-year low, both in nominal dollar value and percent of total U.S. exports there. U.S. grain sales to the USSR declined to $0.3 billion from $1.7 billion in 1985. Grain and soybeans have accounted for about 95 percent of U.S. agricultural exports annually to the USSR since the 1970's.

The decline in agricultural shipments to the USSR in 1986 reduced total U.S. exports there to about $1.26 billion, almost 50 percent below 1985. Agricultural exports accounted for only 52 percent of the total compared to an annual average of over 72 percent during 1975-85. The Soviet Union, which was the second largest market for U.S. farm products in 1984 and 1985, fell to twelfth last year.

USSR agricultural imports in 1987 will likely be close to 1986's estimated $15 billion. Despite the Soviets' fourth largest grain crop and record feed harvest, they are importing grain at a rate that may push the volume above the 1986 level. A decline in prices, however, might hold the overall grain import bill below last year's.

The decline of more than $2.5 billion in agricultural imports from 1985 to 1986 occurred as the estimated value of grain imports fell from $6 billion to somewhat over $3 billion. The amount of grain imported likely declined about 40 percent while unit values slipped perhaps 15 percent. The value drop was not greater because Soviet grain imports were heavy in the first half of the year, prior to a dramatic drop in world grain prices.

The lower agricultural import bills helped Soviet leaders cope with the problem of reduced export earnings (ruble value) and less hard currency caused by the sharp decline in world energy prices. Grain imports as a proportion of hard currency earnings fell from an estimated 23 percent in 1985 to about 13 percent last year, the lowest level since 1974.

The recent decentralization of the monolithic Soviet Ministry of Foreign Trade affects only about 20 percent of trade and leaves most fuel, raw materials, food, and some machinery and equipment under the control of the foreign trade ministry.

Agriculture, after 2 years of stagnation, led the economy in 1986 with 5.1 percent growth. Labor productivity was up 6.9 percent in agriculture's socialized sector and 5.2 percent in the food processing industries. Material expenditures per unit of gross output declined following years of steady increase.

The 1986 improvements resulted from higher quality labor associated with decreased absenteeism, less alcohol abuse, and wages tied more closely to performance, and from better agronomic practices under the expanded intensive technology program. Grain production with near record yields led crop-sector growth. In livestock, growth was attributed mainly to increased output per head.

The 1987 target for gross agricultural output is 224 billion rubles, only 2.4 percent over 1986. The Soviets may attain this goal, but it will be difficult to duplicate 1986's success.

Livestock output in 1987's first quarter outperformed 1986's, and moisture supplies are better than in 1986. However, a dry 1986 fall followed by a severe winter will likely cut winter grain production. Furthermore, the late spring delayed planting, a major problem with the USSR's short growing season. For small grains, the start was the slowest in at least 16 years. The weather may pose problems that improvements in labor, agricultural, and economic practices cannot offset.

AGRICULTURAL GROWTH RESUMES

Soviet economic performance in 1986 improved over 1985. All sectors of the economy reportedly surpassed 1985 except communications which matched its 1985 growth. The biggest turnarounds came in agriculture and transportation, with 5.1 and 4.8 percent growth, respectively.

Some Western economists, however, argue that overall Soviet growth in 1985 and 1986 has been overstated through statistical manipulation. Their analysis has focused on the effect of declining alcohol sales on retail trade figures and attempts to balance the production and consumption sides of the national income accounts.[1] Currently, no evidence suggests that the agricultural or major industrial sector figures have been overstated. The problem of statistical manipulation has been recognized by the Soviets and a recent article in a leading Soviet magazine emphasized the need to improve the quality of statistics.[2]

General Secretary Mikhail Gorbachev's 1986 economic successes, if not statistically induced, appear to be the result of eliminating slack from a relatively stagnant economy rather than from the introduction of significant changes in its structure. While there is much discussion by intellectuals for potential changes in the Soviet economy, future policies are still at the formative stage and their implementation is uncertain. How long the current growth rates can be maintained given the existing system is unknown, but leaders realize that change is necessary to continue long-term growth.

Part of 1986's strong performance was due to Gorbachev's labor and economic policies. During 1986, his first full year in charge, his anti-alcohol campaign cut alcohol sales nearly 37 percent, he replaced 11 of the 14 members of the Politburo with generally younger, more open-minded people, and his crackdown on corruption resulted in numerous convictions and even some executions.

Gorbachev's economic policy changes in 1986 ranged from a new law legalizing limited private enterprise, to liberalizing foreign trade, and additional reorganization at the ministerial management level. While many of the recently enacted changes are limited in scope, discussion of further adjustments, continued emphasis on labor discipline, and more personnel shifts suggest that 1987 economic performance could remain strong. Some factors could slow 1987 growth, including the severe 1986/87 winter, strict implementation of new product quality standards, and potential difficulties from operating under new guidelines for evaluating enterprise performance. Rapid economic growth is necessary for the planned simultaneous increases in investment and consumption over the next few years.

Industrial Output Up, Quality Still Low

The gas industry and machine-building complex were the top industrial performers in 1986. The petroleum industry grew for the first time since 1983. Of all the industrial sectors reported, only nuclear power failed to grow in 1986, likely due to the Chernobyl accident. In addition to the good performances regarding production, labor productivity growth outpaced wage increases by the largest margin in years. If wages are held in check and productivity grows at current rates, some progress could be made towards reducing production cost growth.

Investment rates increased to 7.5 percent in 1986, with continued emphasis on reconstruction and retooling. Investment growth averaged only 3.3 percent annually during 1981-85, significantly less than the 5.2 percent during 1976-80, or the 7.2 percent of 1971-75. Plans through 1990 call for average growth of 4.4 percent, a figure revised upward from 4.1 percent in the original 5-year plan. The machine-building complex is targeted for special development, with planned investment growth of nearly 14 percent annually. While higher investment rates help stimulate the economy, they can be an extremely costly form of growth for the Soviet Union because of relatively low capital productivity and insufficient gains in other input productivities.

Despite the improved production and productivity performance of Soviet industry in

1986, output quality remains below world standards. In the important machine tool and instrument building sectors, less than 17 percent of production meets world standards.[3] By 1990, between 80–95 percent of output is supposed to reach world standards, a difficult task under the best conditions.

Policy Changes in the Economy Continue

Though none of the 1986 policy changes represented a dramatic break with a socialist, centrally planned economy, taken together they do provide the groundwork for a somewhat revitalized Soviet system. The major adjustment appears to be increased reliance on what the Soviets call the "economic mechanism." This means that enterprises rely more on fixed economic indicators and norms than central decrees or ministerial directives. Norms are supposed to be scientifically determined (by local or regional scientific research groups) indicators of an enterprise's potential performance. Norms might be established for profitability based on the production costs and capital labor ratio, for growth in labor productivity based on additions to the firm's capital stock, or for the conservation of valuable inputs based on the firm's production technology.

An enterprise's success or failure is supposed to be based on performance relative to the norms instead of comparisons to previously achieved indicators. Managers are also supposed to make decisions based on their enterprise's relative position to the norms. Plans are to focus on contract fulfillment and wage and productivity growth. Enterprises are to be increasingly self-financed, that is, to use their profits more as they see fit instead of as directed by the State or the ministry.

Self-financing also plays a disciplinary role in that enterprises are supposed to rely on their own funds for investment, not the State's. In theory, poor performance disciplines the enterprise by limiting its capability to invest in future performance. While most of these changes have been discussed and even introduced in the past, their effectiveness has been limited because of interference of the ministries in day-to-day enterprise operations. For the latest round of changes to be effective, such interference must be held in check.

Increased reliance on the economic mechanism was the main thrust of the large economic experiment operating in industry for the past 3 years. In 1986, 44 percent of industrial production was produced by participants in the experiment and in 1987 all industry is to operate under these conditions. However, the experiment apparently has not been a resounding success. According to influential economist Abel Aganbegyan, the experiment has yielded an "...improvement in ensuring contract deliveries, the tempo of labor productivity increased a little, and prime cost has declined slightly".[4] Aganbegyan goes on, however, to suggest that future refinements in the economic mechanism are needed to bring out the full potential of the current changes. The changes he recommends seem more extensive than those being implemented. They include revising the existing system of prices to better reflect socially necessary costs, and supply and demand conditions; allowing direct wholesale purchases and trade between enterprises with minimal State interference; expanding enterprise management autonomy; eliminating annual plans, and using 5-year plans only to set general guidelines.

Aganbegyan correctly identifies the most important factors limiting effective utilization of the economic mechanism. If prices remain artificially set and poor measures of economic effectiveness, then managers will remain unable to make efficient decisions between alternative choices and cost accounting will provide little economic information. Furthermore, as long as the State limits the manager's autonomy, the Government will remain at least partially responsible for continued financial support of the enterprise, preventing self-financing from being fully introduced.

Changes such as those suggested above are not likely to occur before 1990, if at all. They would greatly weaken the influence of the extensive middle level bureaucracy, make managers more responsible for their own actions, and reduce the State's role in directing economic growth. Historically, when significant changes have been introduced in

the Soviet economy their intended effects have been thwarted by limited implementation and conservative interpretation by the various vested interests.

A law under consideration at the beginning of 1987 calls for managers to be elected by employees rather than appointed by ministry officials. The law is supposed to represent an extension of workplace democracy. Its economic impact is uncertain. There is no guarantee that workers would elect the most economically qualified manager, nor does the ability to choose the manager necessarily increase worker motivation and productivity. The political implications are also uncertain. Should workers elect sizeable numbers of noncommunist managers, party influence on production decisions could be reduced. Gorbachev, however, likely views this law as a way to force an increase in party responsibility and economic training.

Is Retail Price Reform Forthcoming?

Some progress appears to have been made in closing the gap between demand and supply of consumer goods and services in 1986. Real per capita income and average wage growth slowed slightly from 1985, while retail trade turnover (apparently exclusive of alcohol sales) and the provision of consumer services increased substantially. Still it will take many years of relatively slow income growth combined with rapid expansion in quality consumer goods and services to relieve the current excess demand.

Discussion continued in 1986 on the need to raise retail prices in order to better reflect "commodity-money" (that is supply-demand) relations. Retail price reform is properly seen as the surest way to diminish the gap between the supply and demand of consumer goods. In 1986, a step in this direction may have occurred with an increase in bread prices, the first since 1955. The price rise was implemented to reduce waste, but also to compensate for expected quality improvements. However, widespread retail price gains are not expected until 1990 because of the enormity of revising the existing retail price structure.

The Soviets are approaching retail price reform with a great deal of caution because low prices for necessities have long been offered as a benefit of socialism, and any significant increases would likely be extremely unpopular with the public and conservative party members. But, already high and continued fast growing retail price subsidies are forcing the Government to reconsider. Subsidies increased nearly 13 percent in 1985 to 60 billion rubles, and accounted for 15 percent of the State budget.[5] Many high-ranking economists see retail price increases as solving both the problems of subsidies and excess demand for quality food products. However, most proposals being discussed include an income compensation package to help offset higher prices. If the package is too liberal and alternate consumer goods are not available, the effectiveness of retail price increases may be minimal.

While consumer demand policies are still being formulated, the Soviets have implemented two supply side policies. One involves foodstuffs. Farms are now allowed to sell up to 30 percent of their procurement plan for fruits and vegetables through nonstate markets. Also, local party and government authorities were given greater freedom to allocate production and set prices at the local level. Emphasis is being placed on the role of the Central Consumer Cooperatives to deliver these goods to consumers. The supply stimulus is supposed to come from the higher-than-state but lower-than-collective farm market retail prices in the cooperatives. There are also some demand effects from this policy. As higher prices in the cooperatives and their increasing share of retail sales raises the overall food price level, quantity demanded falls. On the other hand, the Soviet press emphasizes that the expanded marketing through cooperatives is likely to reduce price levels in collective farm markets, prices the State views as excessively high.

Thus far the results of the policy have been mixed, with only a few farms taking advantage of it. Those not participating have cited that cooperatives are not as well equipped or organized as State procurement organizations and thus more difficult to deal with, or that the farm itself has neither the capital nor expertise to market its own output.

The second supply-side policy involves the legalization of small private enterprises. The law passed in 1986 allows small, family-run, service-oriented enterprises. No outside

employees can be hired. Services such as home, appliance, and shoe repair, and tailoring can be provided. Important areas where cooperatives could have a major impact are food service and light manufacturing for consumer goods. These can take place on private initiative outside the State network as long as income is reported and taxes are paid.

The two supply-side policies should help increase foodstuffs and consumer services to the general public, but are unlikely to completely meet the existing demand.

Agro-industrial Performance Improves

Following 2 years of stagnation, gross agricultural output grew 5.1 percent in 1986, reaching 219.2 billion rubles in 1983 prices. Labor productivity was up 6.9 percent in the socialized sector of agriculture and 5.2 percent in the food processing industries, with wage growth considerably below productivity growth. Material expenditures per 100 rubles of gross output declined 2.8 percent in 1986, following years of steady increase. Most of the credit for improved productivity in the agro-industrial sector has been attributed to greater use of intensive technology (see related article) and reliance on the "economic mechanism." But, after 2 years of no growth despite steadily increasing inputs, an upturn in production was bound to provide glowing productivity figures. The true test of current and future agro-industrial policies will be continued economic growth at 1986 or better rates. Although agricultural performance improved in 1986, the State Agro-industrial Committee (Gosagroprom), which marked its first full year in operation, received little direct credit. Instead, Gosagroprom was described as still in the process of consolidating its operations.

More Policy Changes in Agriculture

Expansion of the "economic mechanism" and intensive technology is supposed to continue in 1987. The new law authorizing increased sales through nonstate markets received mixed reviews and clearly in 1986 did not have a major impact on food availability. Increased producer prices reportedly contributed significantly to expanded procurement of durum and other high-quality wheat, up 100 percent and 50 percent in 1986. However, standards regarding wheat quality were also lessened somewhat which likely accounts for some of the apparent change in quality.

Expansion of contract brigades continued. The brigades are groups of workers who contract with the farm for an amount of output at an agreed price, with incentives to minimize input use. Now, over 11 million workers covering 75 percent of the sown area and 60 percent of livestock raising operate under contracts. The effectiveness of the contracts in increasing productivity and reducing production costs has been limited by the average farm's inability to track individual team's material expenditures and to provide promised inputs. This year's slower wage growth in the agricultural sector was likely due more to new rules for labor remuneration than to the expansion of contract brigades.

New rules tie pay for all employees in the agro-industrial complex (APK) to production results. While farm workers are expected to be paid under a collective contract, 20-percent of wages for farm managers and specialists is determined by final output produced or sold. Bonuses for farm managers, formerly determined by more than 10 different indicators, now depend on production sales, overall profits, and growth in profits. Furthermore, wages of personnel in district, regional, and republic management organizations are determined by the volume of farm sales within their territory.

APK Investment Up Significantly

Investment in the agro-industrial sector grew nearly 13 percent in 1986, reaching 62 billion rubles (32 percent of total investment). However, planned APK investment for 1987 is 10 percent less than last year's actual amount, a surprising decline given long-stated plans to revitalize the agricultural input and food processing sectors. If the cut were implemented, agriculture's share of investment would have to drop significantly to permit expansion of the input and processing spheres of the APK. Given that APK investment has consistently run above plan, a decline of 10 percent in 1987 is unlikely.

Agriculture's share of APK investment did decline slightly in 1986, for the first time since it was called for in the 1982 Food Program. The decline was apparently due

more to above-plan investment in the other sectors than to a real cut in agriculture's share. The above-plan investment in the APK does not bode well for capital productivity in a sector of the economy that historically has very low returns on capital. A major contributor to low productivity is the long construction time for most projects, tying up capital. In 1986, the commissioning of capital in the crucial agro-industrial machine-building and the chemical industries fell well below plans and in most cases below 1985 levels, suggesting the time-lag problem remains. Furthermore, an increasing share of investment, especially in the agricultural sector, is going for what the Soviets refer to as nonproductive investment, which includes schools, recreation centers, and on-farm roads. Investment of this type provides the immediate and important effect of retaining farm workers by narrowing the difference between urban and rural living conditions. *(Robert Koopman)*

Input Situation Remains Complicated

In 1986, 9.4 billion rubles were spent on land improvement, resulting in 1.3 million irrigated and drained hectares being added to a stock that now totals 35 million hectares. Approximately the same amount of land will be developed in 1987. Increased priority is being given to improving existing irrigation and drainage systems during 1986-90. A total of 50.4 billion rubles, 17 percent more than in 1981-85, is to be spent for 3.3 million hectares of new irrigation and 3.6 million hectares of new drainage. A total of 5.6 million hectares of established systems are to be reconstructed.

In August 1986, after intense discussion the Central Committee finally rejected a plan to divert water from northward flowing rivers to Central Asia and Kazakhstan. Wasteful irrigation practices, which if redressed can reduce the need for river diversion, and the costliness of diversion were cited as reasons for the decision.

Employment on State and collective farms and agro-industrial enterprises totaled 25.9 million in 1986. This included 1.9 million specialists with technical education, compared to only 0.8 million in 1970. Eighty-two percent of farm managers had higher education degrees.

Despite increases in farm wages, which rose 3.9 percent for collective farm workers in 1986, reports of shortages of skilled workers continued. Mechanics and milking operators were in short supply as were tractor and combine operators. The latter group grew by only 2 percent in 1981-85, while the number of these machines increased 8.5 percent.

During the past 10 years, agriculture has been supplied with approximately 360,000 tractors annually, but scrapping rates are 12 percent and the annual net increase did not exceed 45,000-48,000 (table 1). About 40,000 tractors are said to be prematurely out of service because of inadequate storage, poor repair, and inefficient fuel use, or other flaws. Because of new policies which limit normally freely available credit and emphasize farm profitability, some farms have cut back on orders for new machinery. In one celebrated case, farms refused to accept

Table 1--Tractors, grain combines, and trucks: Inventories, deliveries, and scrapping rates, USSR 1/

Year	Tractors			Grain combines			Trucks		
	Inventories	Deliveries	Scrapping rate 2/	Inventories	Deliveries	Scrapping rate 2/	Inventories	Deliveries	Scrapping rate 2/
	Thousands		Percent	Thousands		Percent	Thousands		Percent
1966-70 average	1,821	293	12.6	578	94	13.8	1,105	133	NA
1971-75 average	2,189	333	12.3	661	90	12.3	1,282	220	13.6
1976-80 average	2,495	361	12.9	701	108	14.3	1,527	268	15.4
1981	2,598	354	12.4	741	105	11.9	1,653	268	13.2
1982	2,649	350	11.5	771	110	10.8	1,699	268	13.4
1983	2,697	373	12.3	794	116	12.1	1,725	3/ 285	15.2
1984	2,755	382	12.0	822	116	11.0	4/ 1,750	4/ 280	14.8
1985	2,798	393	12.7	832	111	12.3	4/ 1,782	4/ 286	14.5
1986	4/ 2,848	4/ 390	12.1	4/ 854	112	10.8	4/ 1,819	4/ 300	14.7

NA = Not available. 1/ Inventories are for the end of the year. 2/ Equal to deliveries minus change in inventories divided by inventories at the end of the preceding year. 3/ Ekonomika sel'skogo khozyaistva, no. 1 (1984), p. 4. 4/ Estimate.

Yenisey combine harvesters produced in Krasnoyarsk because they were overpriced and poorly made. The factory was left with an unsold supply, unusual in the USSR.

Self-propelled combines now outnumber those in the United States and inventories of tractors and trucks are also large. However, poor quality is a constant complaint. Tractors are often too heavy and fuel inefficient and cause too much soil packing. Specialized implements are in short supply. The lack of machinery for conservation tillage, fodder, fruit, and vegetable production, and fertilizer and pesticide application greatly limit agricultural output.

The application of mineral fertilizer per hectare of cropland increased from 84 kg to 113 kg per hectare in 1981–85, as the application rate on small grains increased over 40 percent (table 2). Nitrogen fertilizer supplies increased substantially, but the relative availability of the other major nutrients worsened between 1965 and 1985 (table 3). The overall general NPK balance for Soviet fertilizer should be approximately (1 : 1.1 : 1). However these ratios were more nearly met in 1965 by proportions of (1 : 0.93 : 0.83) than in 1985 (1: 0.65 : 0.6). Beginning in 1985, the imbalance has been partially redressed as phosphate and potassium deliveries to farms increased at higher rates than nitrogen deliveries in 1985 and 1986. Soviet estimates indicate that 78 million hectares of arable land lack adequate usable phosphorus and 41 million hectares lack potassium. Only about one-third of the 90–100 million tons of lime needed annually for the one-quarter (52 million hectares) of Soviet cropland which is acidic is actually applied.

While the fertilizer available to farms is now mostly granulated, and the share of single-compounds decreased by 40 percent during 1981–85, there is still an insufficient selection of multinutrient types. Some other specific problems include insufficient rich phosphate reserves, inadequate facilities to distribute and store fertilizer, especially anhydrous ammonia, and the shortage of equipment to apply fertilizer in nonbroadcast form.

Institutes and research departments have recently been created to study some of the problems of agrochemical use, including application and storage. Insufficient storage and packaging cause many fertilizers and pesticides to be lost or deteriorate in the distribution network. More small production facilities would reduce transportation, now the major bottleneck for agricultural liming, to a distance of 400 kilometers or less.

Table 2--Application of mineral fertilizer to selected crops, USSR 1/

Year	Grain excluding corn	Corn for grain	Cotton	Sugar-beets	Potatoes
Rate			Kilograms per hectare		
1974	40	124	367	299	229
1975	42	155	391	399	280
1976	47	145	393	459	254
1977	48	135	395	469	274
1978	51	180	433	483	287
1979	49	192	410	451	274
1980	51	215	417	438	274
1981	51	211	417	425	278
1982	54	182	384	445	284
1983	NA	NA	NA	NA	NA
1984	65	232	372	482	305
1985	72	200	376	455	293
1986	86	226	390	443	304
Share fertilized			Percent		
1974	48	94	98	98	91
1975	48	94	99	99	93
1976	50	92	99	99	94
1977	52	89	99	99	94
1978	54	94	99	99	94
1979	53	94	97	99	93
1980	57	95	94	99	93
1981	58	94	100	99	93
1982	59	93	100	99	93
1983	NA	NA	NA	NA	NA
1984	68	96	99	99	95
1985	71	94	98	99	95
1986	73	97	99	99	95

NA = Not available. 1/ Nutrient weight basis.

Source: Vestnik statistiki, various issues.

As in many countries where agriculture is becoming industrialized, increased fertilizer use often is accompanied by pest problems. In 1986, heavy and medium weed infestation beset 65 percent of all grain land and approximately half of sunflower, cotton, and potato area, causing losses to production estimated at 7.5 billion rubles. An estimated 17–18 million tons of grain, 14 million tons of sugarbeets, and 6.5 million tons of fruits and berries worth 6 billion rubles may be lost to diseases and insects annually.

While some of these losses can be reduced by intensive technology (see related article), it seems paradoxical that the domestic

Table 3--Production and deliveries of mineral fertilizers to agriculture, USSR

Year	Total	Nitrogen	Phosphate	Ground phosphate rock	Potash	Trace elements
			1,000 metric tons 1/			
Production						
1966-70 average	10,379	4,210	2,030	955	3,177	7
1971-75 average	17,877	7,248	3,451	1,032	6,138	8
1976-80 average	23,328	9,283	5,300	828	7,910	7
1981	25,998	10,705	6,059	777	8,449	8
1982	26,738	11,593	6,283	774	8,079	9
1983	29,733	13,014	6,644	773	9,294	8
1984	30,808	13,328	6,929	766	9,776	9
1985	33,194	14,223	7,825	771	10,367	8
1986	34,700	2/ 14,770	2/ 8,400	2/ 776	2/ 10,745	2/ 9
Deliveries						
1966-70 average	8,452	3,520	1,847	857	2,221	7
1971-75 average	13,802	6,209	2,978	904	3,703	8
1976-80 average	18,063	7,632	4,460	827	5,137	7
1981	19,176	8,383	5,098	781	4,905	9
1982	20,152	9,038	5,344	771	4,991	8
1983	22,977	10,302	5,691	774	6,201	9
1984	23,080	10,279	5,858	767	6,167	9
1985	25,395	10,950	6,839	776	6,822	8
1986	2/ 28,500	2/ 11,800	2/ 8,215	2/ 776	2/ 7,700	2/ 9

1/ Nutrient weight basis. Nitrogen--20.5 percent N, phosphates--18.7 percent P2/05, ground phosphate rock--19 percent P2/05, potash--41.6 percent K2/0. 2/ Estimate.

production of chemical pesticides (equal to 332,000 tons of active material in 1986) fell by 4 percent. The decline reflects the poor quality and environmental hazard of what was being produced.

About an eighth of the 60 compounds the USSR produced in 1981 had been eliminated by 1984, although over 50 percent of their chemical pesticides still consisted of chlorinated hydrocarbons. These have been banned for some time for agricultural purposes in most developed countries. The 53 compounds produced in the USSR in 1984 compare to the 144 which the agrochemical service feels are necessary, and to the 500 which are produced in the United States and West Germany.

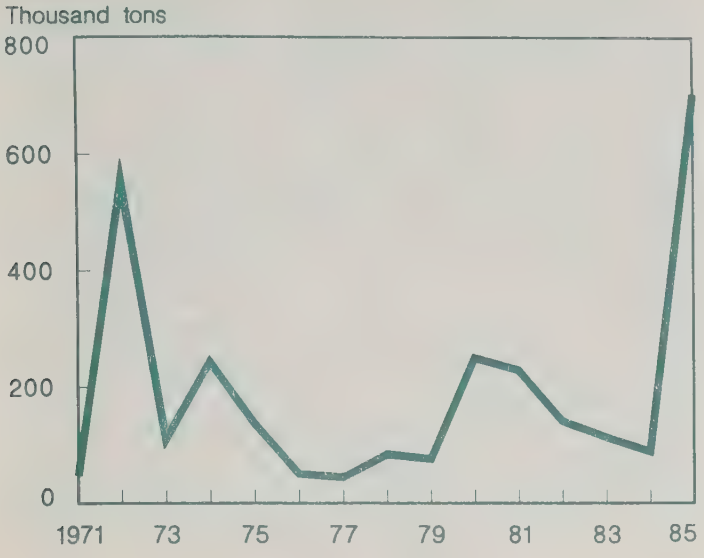
A problem accompanying the relatively few pesticides available has been the increased resistance of both weeds and insects to repeated applications of products like 2-4-D and dipterex. Resistance has caused farms to use higher application rates, and resulted in toxicity, lower yields, and growing environmental costs.

The deterioration of yields and the environment has also resulted from applying the wrong kinds of chemical fertilizers. Shortages of non-nitrate and non-chlorine fertilizers (78 percent of all potassium fertilizers are of this type) have led to excessive nitrate concentrations and chlorine toxicity in certain field crops.

The small number of domestically-produced pesticides results from the emphasis on quantity and the impediments to new technology prevalent in the Soviet system. Only 13 pesticides were developed by the All Union Research Institute of Plant Protection during 1981-85. All but one of these were replicas of older foreign preparations, some with expired patents. Only one of these pesticides was used. A source critical of the Soviet pesticide research and development effort notes that in the West as many as 30,000 high-molecular organic compounds are tested to find a single promising pesticide, while only 4,500 are tested in the USSR.

An extensive network of field laboratories for analysis and dosage recommendations is being created for more effective and safe application of pesticides and chemical fertilizers. However, the necessary industrial base for domestic production of modern

Figure 1
USSR Phosphate Fertilizer Imports



pesticides is probably far in the future. The extent to which authorities recognize this bottleneck is reflected in recent imports. In 1985 (latest data), phosphate fertilizer imports were 702,700 tons, almost 8 times above 1984 (figure 1). Imports of chemical pesticides increased 68 percent from 1981, reaching 152,100 tons in 1985 (figure 2). An even sharper increase occurred in the importation of high-potency modern pesticides from developed Western countries. Imports of these pesticides increased to 84,200 tons in 1985, up over 71 percent in physical and 123 percent in value terms from 1984. The Soviets export nitrogen and potassium fertilizers primarily to other socialist countries (figure 3).
(Yuri Markish and Kenneth Gray)

Figure 2
USSR Plant Protectant Trade

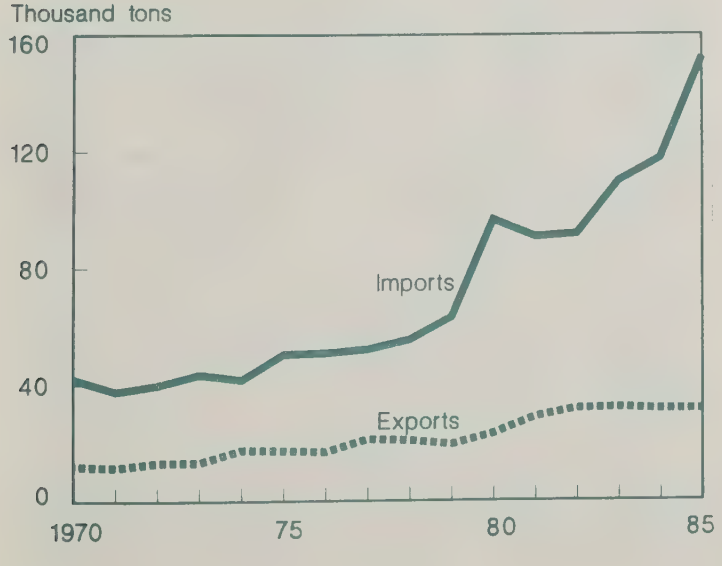
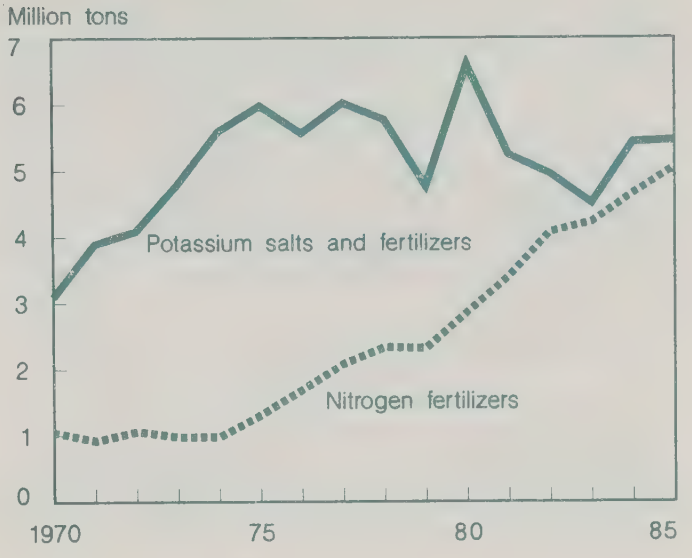


Figure 3
USSR Nitrogen and Potassium Exports



DIFFICULT FOR 1987 TO MATCH 1986 GROWTH

The target for 1987 gross agricultural output is 224 billion rubles, requiring only 2.4 percent growth over 1986. The Soviets may attain this goal, but will likely find it difficult to duplicate, much less exceed the 5.1 percent growth--about two-thirds from crops--experienced in 1986. Grain production, enjoying near record yields, led crop-sector growth. In the livestock sector, growth was attributed mainly to increased output per head rather than inventory expansion or depletion.

The stage for 1987 lacks some of the props that 1986 had. The stagnation in Soviet agricultural output in both 1984 and 1985 provided a low base against which 1986 improvements could be contrasted. The fall and winter conditions for grain and forage crops planted in late 1985 for harvest in 1986 were much better than for those planted in 1986 for 1987 harvest. Although the soil moisture supplies were generally better in the spring of 1987 than in 1986, cold weather delayed planting well behind 1986's progress. The dramatic and easy returns from increasing worker performance by cutting losses from inattention, absenteeism, and alcohol abuse may have already been largely captured in 1986.

If average growing and harvesting conditions hold for the rest of 1987, the new intensification programs in the agricultural

sector will be responsible for growth near or above 1986's rate . If excellent growing conditions occurred in the major agricultural areas through the rest of the season, that could help 1987's performance versus 1986's. In 1986, the weather in the growing season was only fair to average in most major agricultural areas, with drought conditions in some important grain sections. The exception was in the New Lands where growing and harvesting conditions were good.

Chernobyl Effects Not Evident

As the analyses in this report make evident, no significant changes in Soviet agricultural production and trade due to the release of radioactive materials from the Chernobyl Atomic Energy Station, are discernible.[6] Furthermore, data for individual republics and oblasts (sub–republic administrative units) do not show that the contaminants released during April 26–May 7, 1986, significantly affected agricultural production and consumption at those levels. Although agricultural activities may have largely been stopped in the immediate zone, the area accounts for less than 0.1 percent of Soviet farm production.

In the wake of the accident at the northern border of the Ukraine close to Belorussia, the Soviets ceased agricultural production in a 30–kilometer zone around the plant site and modified practices in other areas. In the areas that the Soviets felt were potentially affected, the Government purchased livestock products and fresh vegetables (even those produced on workers' personal plots) and screened products before resale. People were warned to eat only food that was sold through State–supervised markets. The Soviets apparently did not discard agricultural products in any significant quantity as a result of the screening. The Soviets have not acknowledged blending contaminated and noncontaminated products to dilute the level of hazard.

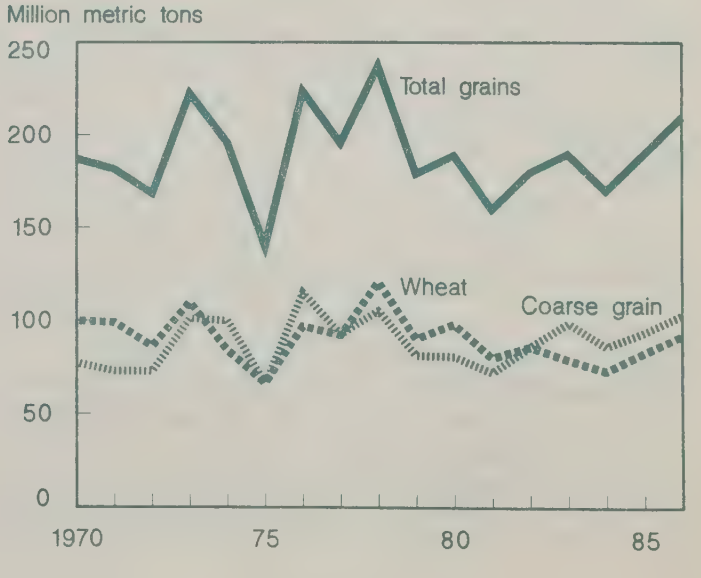
Why were food producers and consumers outside the USSR apparently more affected by the Chernobyl accident? One explanation is that while there were many reports on radiation outside the USSR, contamination was generally below the international maximums for acceptable levels of radiation. Adding to the widespread perception that significant contamination occurred outside the Soviet Union was the fact that some countries and local jurisdictions had standards much stricter than those of international organizations such as the World Health Organization and the International Atomic Energy Agency. Another factor that could possibly explain some differences in the effects on the USSR versus other parts of Europe is that the deposition and accumulation of contamination is highly variable depending on weather and geographic conditions. Finally, Soviet citizens likely did not have the same type of information about the accident and its possible consequences, nor the options for diet modifications even if they had the information, that Western consumers have. *(Kathryn Zeimetz)*

Concerted Efforts To Boost Grain Output

Following the apparent success of Gorbachev's agricultural drive in 1986, Soviet grain production in 1987 should exceed the 1981–85 average of 180 million tons despite the low winter grain area, but may not reach 1986's 210. Extensive reseeding of grains in the spring may largely offset the loss of the winter area.

In 1986, grain production rose dramatically, marking the largest crop since the 1978 record (figure 4). The sharp rise is attributed to the reported expansion of area under intensive technology, increased production and procurement incentives, and better labor due to the worker discipline and

Figure 4
USSR Grain Production



anti-alcohol campaigns and emphasis on training. Significant policy changes concerning pricing and grading contributed to the large Government purchases of quality wheat in 1986 and may help raise output in 1987. Utilization of grain for feed increased markedly because livestock inventories were record in 1986. Grain stocks, drawn down during the U.S. embargo, continued to rise. Dockage and waste estimates were higher due to the unusually large crop.

Was 1986's Success a Turning Point?

The Soviets reported 1986 grain production at 210.1 million tons, the best in 8 years and the fourth largest ever. Output exceeded 1985 production by 10 percent and was a marked 17-percent above the 1981-85 average. The average yield for all grains reached 1.80 tons per hectare, second only to the record 1.85 tons in 1978 (table 4). Total grain area was down about 1.5 million hectares in 1986, a decline for the sixth straight year. Final grain area, at 116.5 million hectares, continued to decline as the Soviets increased clean summer fallow and nongrain feed area. Fallow reached 21.7 million hectares in 1986, up from 11 million in 1975 as the Soviets have concentrated resources on the better soils. Roughage crop area rose to 71.4 million hectares from 65.6 million in 1975.

Most of the decline was in wheat, with area planted the smallest in over 30 years. Winter and spring wheat areas in 1986 were

Table 4--Area, yield, and production of grain, USSR 1/

Year	Wheat 2/ Winter	Wheat 2/ Spring	Wheat 2/ Total	Rye	Barley	Oats	Corn	Other 3/	Total grain
				1,000 hectares					
Area									
1966-70 average	18,280	48,894	67,174	11,505	20,331	8,680	3,517	10,876	122,083
1971-75 average	18,443	43,025	61,468	8,500	28,370	11,310	3,596	10,743	123,987
1976-80 average	20,471	40,240	60,711	7,714	34,011	12,080	2,969	10,421	127,905
1981	20,305	38,927	59,232	7,551	31,781	12,470	3,545	10,980	125,559
1982	20,438	36,840	57,278	9,829	29,706	11,489	4,161	10,549	123,012
1983	16,850	33,973	50,823	10,334	31,679	12,389	3,894	11,690	120,809
1984	17,956	33,105	51,061	9,420	30,426	12,806	3,919	11,980	119,612
1985	17,996	32,269	50,265	9,520	29,058	12,604	4,482	12,010	117,939
1986	16,632	32,096	48,728	8,741	29,964	13,173	4,223	11,648	116,477
1987 4/	13,500	32,500	46,000	8,500	32,000	12,800	4,800	12,200	116,300
				Metric tons per hectare					
Yield 1/									
1966-70 average	1.96	1.11	1.34	1.12	1.50	1.38	2.72	1.16	1.37
1971-75 average	2.26	1.10	1.45	1.35	1.53	1.31	2.84	1.19	1.46
1976-80 average	2.48	1.22	1.64	1.41	1.62	1.42	3.22	1.21	1.60
1981	2.29	0.89	1.37	1.28	1.14	0.99	2.66	0.88	1.26
1982	2.33	1.00	1.47	1.51	1.45	1.46	3.53	1.25	1.52
1983	2.42	1.08	1.52	1.68	1.58	1.51	3.39	1.31	1.59
1984	2.22	0.87	1.34	1.49	1.37	1.50	3.45	1.29	1.44
1985	2.16	1.21	1.55	1.66	1.60	1.63	3.21	1.37	1.62
1986	2.80	1.43	1.89	1.76	1.80	1.66	2.95	1.22	1.80
1987 4/	2.40	1.30	1.63	1.65	1.67	1.60	3.30	1.31	1.68
				1,000 metric tons					
Production									
1966-70 average	35,888	54,304	90,192	12,834	30,454	11,938	9,558	12,585	167,561
1971-75 average	41,590	47,345	88,935	11,493	43,289	14,812	10,215	12,810	181,554
1976-80 average	50,725	48,948	99,673	10,880	55,150	17,161	9,568	12,595	205,027
1981	46,498	34,645	81,100	9,600	36,100	12,400	9,400	9,716	158,216
1982	47,621	36,840	84,300	14,800	43,000	16,800	14,700	13,173	186,773
1983	40,777	36,691	77,500	17,300	50,000	18,800	13,300	15,316	192,216
1984	39,862	28,801	68,600	14,000	41,800	19,200	13,600	15,427	172,627
1985	38,871	39,045	78,100	15,700	46,500	20,500	14,400	16,474	191,674
1986	46,528	45,778	92,306	15,248	53,889	21,929	12,479	14,217	210,068
1987 4/	32,500	42,500	75,000	14,000	53,500	20,500	16,000	16,000	195,000

1/ Some figures may not add or calculate because of rounding. 2/ Production data for winter wheat and spring wheat derived from official area and yield data for 1981-85. 3/ Includes millet, buckwheat, rice, pulses, and miscellaneous grains. 4/ USDA May 1987 forecast.

down 26 percent and 18 percent from 1980. Despite the decline in wheat area, output in 1986 was 18 percent above the previous 5-year average, with the second best yield ever. Production of quality wheat was up markedly. Part of the success story reflected better-than-average growing and harvesting conditions in the New Lands, a major area for high-quality wheat. But the improved yields in other areas, such as the North Caucasus and the Ukraine, are largely attributed to better agronomic practices.

Coarse grain production was the second largest ever, with the fourth best yields. Production of barley and oats, both sown on increased areas in 1986, were up 16 percent and 7 percent from 1985. Rye area decreased by 8 percent in 1986 due to planting problems in the fall of 1985. However, production fell only about 3 percent because yields matched the 1978 record. Better seed varieties, the result of increased emphasis on research by the intensive technology program, played a major role.

The intensification program did not maintain corn yields in the face of the summer drought. Yields were down 8 percent and the lowest in over a decade. With final area down 6 percent, production declined 13 percent to 12.5 million tons.

The adverse impact of the drought on 1986 grain production was apparently more localized than originally believed, limited primarily to the lower half of the Volga region and parts of the Central Black Soil zone and the eastern and southern Ukraine. Additionally, the dry weather created near ideal conditions for harvesting, permitting a quicker pace and diminishing losses in cutting and threshing. Unlike the weather in the European USSR, the New Lands had very good moisture supplies which contributed to excellent spring grain production. Still, weather in the grain producing regions was not better than average overall, and the major reasons for the harvest increase likely included a variety of management changes. These changes hold the key to the Soviets' ability to increase yields and decrease yield variability despite erratic weather.

Extensive Grain Losses in 1986/87 Winter

The effectiveness of the new management policies should be evident in the outcome of the 1987 harvest because the crop got off to a less-than-ideal start. Winterkill, the loss of planted area for a variety of causes during fall and winter, was well above the usual 15-18 percent. Estimated losses have reduced Soviet winter grain area by about 30 percent this year. The February 5, 1987, *Izvestiya* reported winterkill damage of about 9 million hectares, or roughly 24 percent of the estimated 37 million hectares planted to all winter crops. Winter grains were estimated to occupy about 32.5 million hectares of this total. Winter wheat and barley likely suffered the most, while rye likely did better because of resistant seed varieties and a protective snow cover.

Winter grains were severely stressed in early January by record low temperatures (ranging from -30° to -35° Celsius) in many areas, and damaging freeze-thaw conditions in the southern Ukraine and North Caucasus. In February, winter grains encountered above average temperatures accompanied by extensive ice crusting caused by freezing drizzle. Heavy snow fell farther north. Poor development and spotty emergence of grain crops in the southern Ukraine and North Caucasus region, the result of abnormally dry soil during planting and germination, greatly increased the susceptibility to the winter's extremes. During March and April, below-average temperatures and above-average precipitation posed further susceptibility problems, particularly as the crops began to lose their hardiness.

Due to the unseasonably cold and wet April, winter grains broke dormancy 2-3 weeks later than average. Furthermore, the delayed spring caused field work to fall behind, with seeding of spring grains the slowest in at least 16 years. During the first week of May, temperatures warmed up and precipitation diminished, allowing seeding progress to speed up.

Although the unusually heavy winterkill is expected to cut the area of winter grains to the lowest level since at least 1955, the losses do not equate necessarily to a corresponding decline in total grain production in 1987. The

yields of the remaining winter crops are not necessarily lower. Furthermore, reseeding of the winterkilled areas to spring grains, including generally higher yielding corn, has been successful in the past in making up for winter grain losses.

For example, although winterkill reached 24 percent in 1976, yields of winter wheat and rye were above the record 1976--80 average. The total grain area was less than 2 percent below the 1976--80 average, and grain production in 1976 was a record and remains the second best ever. The 1977 winter grain crop suffered an unusually early winter, causing extensive damage to plants which had not developed a firm stand before dormancy. Winter grain area fell 22 percent and winter rye yields were below average. However, winter wheat yields were above the record 1976--80 average, and total production was the third highest till then and only 5 percent below the standing 1976--80 annual average of 205 million tons. In 1979, an autumn drought and a very severe winter caused substantial winterkill, and area sown to winter grains fell by 20 percent. Unlike 1976 and 1977, the yields of the remaining winter wheat stands were down. However, the decline in production that year was also due to the Soviet cut in grain area to increase summer fallow and a severe summer drought that reduced spring barley and corn yields. Weather conditions during the remainder of the season will be important in determining the final outcome of the crop.

Improved Agronomics a Goal

The Soviets claim intensive technology in grain growing was largely accountable for the rise in 1986 output and will be important to better yields in 1987. Intensive technology, in its broadest sense, is the improved use of quality agrochemicals, seeds, and farm equipment and their concentration on the best soils (see related article).

A major component of intensive technology is increased and better coordinated application of fertilizers. In 1986, almost 73 percent of the small grain area was fertilized, a record. The application rate for this area reached 86 kilograms per hectare, almost 20 percent over 1985 and nearly 70 percent from 1980. The marked rise in 1986 is the largest increase in at least a decade.

This year intensive technology is planned for about 36 million hectares of grains, and is to account for an additional 30 million tons of grain. How the Soviets calculate the gains from intensive technology is unclear, so claims about its effectiveness should be approached cautiously. About half of the estimated 32.5 million hectares planted to winter grains was under intensive technology, with winter wheat comprising the largest share. These methods were planned to encompass about 20 million hectares of the spring grains, primarily spring wheat and corn. Moreover, the spring grains which were reseeded over the winterkilled areas may benefit from the inputs originally allocated for intensive winter grain production.

Reportedly, intensive technology on 6.4 million hectares of winter wheat and 10.5 million hectares of spring wheat in 1985 produced an additional 16 million tons of grain. In 1986, its use on grains almost doubled to 31 million hectares, including over 15.1 million hectares of winter grains, 10.9 million hectares of spring wheat, 700,000 hectares of millet, and nearly all of the 3.9 million hectares of corn for grain and 600,000 hectares of rice. Corn, formerly grown under what the Soviets called industrial crop technology (ICT), appears to have come under intensive technology in 1986. The Soviets attribute an additional 24 million tons of grain to intensive technology in 1986.

A Soviet radio announcement in March 1987 stated that as a result of intensive technology a minimum of 200 million tons of grain could be produced in a "bad year" and as much as 250 million tons in a "good year".[7] However, more and more the Soviet media are reporting shortfalls in the introduction of intensive technology and complaints by farmers about difficulties in meeting goals due to unavailable specialized machinery, fertilizers, and insecticides. Despite repeated official claims to the contrary, the real effectiveness of the program and its likely future impact remain unclear. It does seem evident, however, that as intensive technology expands, the demand for quality inputs will outpace supplies.

Improved Management Another Goal

Many wide- ranging economic and agricultural policies were introduced during

1986 which had a positive impact on output. Even though not new, collective contracts, cost-accounting, self-financing, and farm self-sufficiency have received particular emphasis as a means to raising productivity, efficiency, and profitability of grain producers.

The widespread crackdown on mismanagement, corruption, and alcohol abuse in the work place during 1985 and 1986, was likely responsible for some cutback in waste and losses. However, it is possible that the major impact was felt immediately and moved worker effort to a new plateau in 1986.

In March 1986, the Government announced incentives to stimulate grain production and sales to the State. On top of an already existing 50-percent bonus for grain deliveries to the State above the 1981–85 average, new 100 percent bonuses for above-plan deliveries were inititated. Moreover, farms were assured that their sales obligations would not exceed the 1986 level through 1990 even if they showed large production and delivery gains.

In addition, a sweepstakes for producer sales to the State was announced by Gosagroprom, offering thousands of cars and buses. This incentive, offered after the harvest was underway, was most likely designed to entice farms with surplus grain to sell it to the State. Farms overfulfilling sale plans had the right to purchase additional trucks, tractors, and other scarce input supplies. The offer was especially attractive for many of the well-run farms already awash in excess rubles due to price increases in 1983, but with no equipment and inputs available to buy. Furthermore, such an arrangement makes it easier for the State to direct resources to the most productive enterprises and avoid criticism for doing so. A continuation of similar incentives, even though the impact is limited, should raise sales this year as well.

Priority On Wheat Production and Use

A number of policy innovations adopted in the last 2 years show the priority on domestic production of quality wheat and bread, with the stated intent to limit imports of food-quality wheat. On the production side, wheat areas have been top targets in 1985, 1986, and 1987 for intensive technology. For example, the Soviets reported that all areas under this technology in 1985 were planted to wheat, and in 1986 an estimated 60-70 percent of the intensive areas were sown with wheat.

Procurement policies have also focused on high-quality food wheat. In June 1985, just months after Gorbachev assumed leadership, producer prices for milling-quality wheat and durum wheat were raised significantly. These incentives remained in 1986 and farms were also entitled to above-plan bonuses for durum wheat, even if the procurement targets for other types of grain were not met. Furthermore, changes in the standards by which wheat was graded took effect on June 1, 1986. Farmers knew of the changes prior to planting, however, because they were published in July 1985. The new regulations specified that discoloration and test weights no longer disqualified wheat if gluten and protein content requirements were met. According to the Soviets, procurement of high-quality wheat and durum wheat rose by 50 percent and 100 percent in 1986. Government purchases of quality wheat was more than 30 million tons, the highest level in recent years. These basic policies are expected to continue.

Several changes occurred in Soviet retail bread policy. Bread prices, which the State has maintained basically unchanged since 1955, have increasingly been criticized for being too low. Due to low price and a rapid spoilage rate, an estimated 20-25 percent of the 35 million tons of bread produced each year is fed to animals or discarded.[8]

In late 1986, new bread varieties were introduced, priced several kopecks more per kilogram than the previously most expensive types. The higher prices were justified by better quality. While strong resistance exists to raising prices until compensatory pensions and wage increases are enacted, there is much support for increasing prices for higher quality bread and discontinuing production of certain lower quality varieties. Price increases would reduce the State subsidy to the baking industry, estimated at almost 2 billion rubles annually. They would also allow for greater investment in the milling and baking industries, larger expenditures for better flour and other additives to prevent rapid spoilage, and innovations in packaging. Plans call for

doubling the production of the highest grade flour from 7.4 million tons in 1985 to 15-16 million tons by 1990.[9] While these targets are extremely ambitious, they underline the priority being given to increased production of high-quality wheat and bread.

For the USSR, which until the early 1970's was generally a net wheat exporter and remains with the People's Republic of China (PRC) the world's largest producer, a goal of becoming self-sufficient clearly has political and economic implications. Securing a domestic supply of food wheat and limiting retail waste are definite objectives. The most obvious economic advantage is reducing large wheat imports, particularly in the face of diminished hard currency earnings.

USDA's May Forecast At 195 Million Tons

The Soviets are calling for the very ambitious grain production target of 232 million tons for 1987 and 250-255 million tons by 1990. Although the USSR is unlikely to attain its high goal, production should exceed the 1981–85 average of 180 million tons as the Soviets continue the measures applied during 1986. These include expansion of area under intensive technology, increased production and procurement incentives, greater stress on collective contract brigades, continued enforcement of labor discipline and anti-alcohol campaigns, and more emphasis on wheat self-sufficiency. The Soviets believe that such methods can help them maintain production despite adverse weather such as the dry 1986 fall and harsh winter, and to raise output when opportunities such as the good moisture supplies this spring are present.

USDA's May forecast of Soviet grain production in 1987 was 195 million tons on 116.3 million hectares. Wheat production was estimated at 75 million tons, a drop of about 20 percent from last year, primarily due to damage to the winter wheat crop. Wheat area was forecast to drop to 46 million hectares and yields to decline to 1.63 tons per hectare. Output of coarse grains was estimated at 106 million tons, the same as 1986's, with area up 2 million hectares from 1986 and yields down to 1.75 tons per hectare.

As a result of autumn sowing shortfalls and extensive reductions in winter grain area, the USDA estimate of winter grain area was 23 million hectares, about 4 million below last year, and the lowest since at least 1955. Winter grain production was expected to decline 17 million tons from 1986. To offset the reductions in winter grains, the Soviets were expected to significantly expand spring grain area. USDA estimated that spring grains would be about 93 million hectares, compared with 89.7 million in 1986.

Grain Feeding at Record Levels

Estimates of supply and use of grain have been revised since last year, following the release of official production data for 1981–85 and new information on seed and industrial use (table 5). The new data indicate more significant stockbuilding in the last 5 years than previously estimated. Total grain utilization (including dockage and waste) has been increasing very slowly from the recent low of 211 million tons in 1981/82. Seed use of grain has fallen because of smaller area sown to grain. Industrial use of grain has remained generally unchanged, but is now below its peak because of lower vodka production and may fall further.

Population increases have been balanced by declines in per capita consumption to keep food use of grain unchanged. Moreover, if retail bread prices are raised significantly on a broad scale, compared to the minor changes made in 1986, the demand for bread grains would likely decline, thus reducing grain for food use. Such an increase in the price of bread, however, is unlikely in the near-term.

Future expansion of grain use in the USSR is likely to depend almost entirely on more feeding. After declining between 1978/79 and 1982/83, grain feeding is once again increasing. The strategy of increasing animal productivity may require renewed emphasis on grain feeding in coming years.

Soviets Release 1981–85 Grain Data

In line with the campaign of "openness", the Central Statistical Administration released data on grain yields and production for 1981–85 in the fall of 1986. These data had been excluded from the previous four statistical yearbooks. USDA estimates for wheat, coarse grain, and total grain production proved to be very close to the actual figures due in a large part to ancillary information

Table 5--Supply and use of grain, USSR 1/

Year beginning July 1	Production 2/	Trade		Availability	Utilization						
		Imports	Exports		Seed	Industrial	Food	Dockage-waste	Feed	Total	Stock change 3/
	Million metric tons										
Total grains 4/											
1981/82	158.2	47.3	0.5	205	25	5	47	16	118	211	-6
1982/83	186.8	34.3	0.5	221	25	5	47	18	118	213	+8
1983/84	192.2	32.5	0.5	224	26	5	47	21	120	218	+6
1984/85	172.6	55.5	0.5	228	24	6	47	19	123	219	+9
1985/86	191.7	29.9	0.5	221	24	5	47	18	124	218	+4
1986/87	210.1	30.0	1.0	239	24	5	47	23	130	229	+10
1987/88 5/	195.0	36.0	1.0	230	25	5	47	21	130	228	+2
Wheat											
1981/82	81.1	20.3	0.5	101	11	2	36	8	47	104	-3
1982/83	84.3	20.8	0.5	105	11	2	36	8	44	101	+4
1983/84	77.5	20.5	0.5	98	11	2	36	9	35	93	+4
1984/85	68.6	28.1	0.5	96	11	2	36	8	35	91	+5
1985/86	78.1	15.7	0.5	93	11	1	36	8	36	92	+2
1986/87	92.3	16.0	1.0	107	11	1	36	10	42	100	+7
1987/88 5/	75.0	21.0	1.0	95	11	1	36	8	37	93	+2
Coarse grains 6/											
1981/82	69.3	26.0	0	95	13	3	7	7	68	98	-3
1982/83	91.8	12.5	0	104	13	3	7	9	69	101	+4
1983/84	101.9	11.5	0	113	13	3	7	11	78	112	+2
1984/85	90.5	26.9	0	117	12	4	7	10	81	114	+4
1985/86	100.0	13.7	0	114	12	4	7	9	80	112	+2
1986/87	105.9	13.0	0	119	12	4	7	11	82	116	+3
1987/88 5/	106.0	14.0	0	120	13	4	7	11	85	120	0

1/ All are USDA estimates and forecasts except production 1981-86. Rounded to the nearest million tons, except for production and trade data. Totals may not add due to rounding. 2/ Calendar year basis. 3/ Difference between availability and total utilization. 4/ Includes wheat, coarse grains, buckwheat, rice, pulses, and miscellaneous grains. 5/ USDA May 1987 forecast. 6/ Includes rye, barley, oats, corn, and millet.

received each year during and after grain harvesting. For example, the end-of-year estimate of the 1983 crop was lowered in 1984 from 200 million tons after a statement made by General Secretary Chernenko that the crop "exceeded 190 million tons."

The data confirm a reversal in the long-term uptrend in average annual grain production. In 1981-85, output averaged only 180 million tons compared with 205 million in 1976-80. Declining yields accounted for about half of the drop. Of the major grains, only rye achieved higher yields in 1981-85 than in 1976-80, corn and oat yields were basically unchanged, while the three most important grains--winter and spring wheat, and spring barley--all experienced yield declines.

All three major grain producing republics--the Russian Republic, the Ukraine, and Kazakhstan--had lower production and yields in 1981-85. Yields in Kazakhstan fell over 20 percent, while those in the Ukraine and Russian Republic were down 7 and 5 percent. The regions maintaining or slightly increasing yields in 1981-85 compared to 1976-80 were outside the main Soviet grain belt. These include the remaining twelve Soviet republics and the Non-Black Soil Zone of the Russian Republic.

The drop in grain production in 1981-85 can be partly explained by less area planted, unfavorable weather, and the lack of improvement in agronomic and management practices to effectively use the fertilizer increases. From 1980 to 1985, grain area fell by nearly 9 million hectares as the Soviets concentrated inputs on better soils and switched grain areas to clean summer fallow and nongrain feed crops. Furthermore, unusually poor weather, particularly very dry summers and desiccating wind storms in 1981 and 1984, cut production. Lastly, although fertilizer applied to small grains increased about 40 percent between 1980 and 1985, the lack of complimentary inputs and the inappropriate use of fertilizers prevented yields from rising as they should have. The

sharp increase in grain output in 1986 is seen by some as the result of finally matching proper farming techniques with increased fertilizer applications. *(Christian J. Foster)*

USDA Forecasting Process

The USDA forecasts world grain production each month and releases a specific estimate for Soviet production in May. Four groups within USDA cooperate in the process: the Eastern Europe–USSR Branch (EE–USSR Branch) of the Economics Research Service; the Foreign Production Estimates Division (FPED) and Current Crops Assessments Division (CCAD), Foreign Agricultural Service (FAS); and the World Agricultural Outlook Board (WAOB).

The EE–USSR Branch combines long–term research on Soviet agro–industrial policy and performance and current crop situation and outlook work to assess grain production prospects. The Branch also closely monitors Soviet agricultural, economic, scientific, and news periodicals for information on crop conditions and grain production and use. FPED maintains close ties with the U.S. agricultural attache in the USSR and follows crop progress reports. CCAD monitors the Soviet grain crop through satellite (Landsat and Metsat) imagery which provides information on area and crop vigor. WAOB, which operates the Joint Agricultural Weather Facility with the National Oceanic and Atmospheric Administration, continually follows world weather trends, synthesizes information on crop areas and cropping patterns, and identifies significant weather events and their potential crop impacts. WAOB senior commodity analysts also chair meetings where production prospects are discussed.

Feed at Record Levels

The USSR entered 1987 with very good feed supplies. Total feed availability for the 1986/87 year is estimated at a record, nearly 2 percent above last year's amount (table 6). More potatoes and straw accounted for much of the increase. Larger amounts of grain also bolstered feed supplies. Part of the estimated increase in grain feeding this year is attributable to the unusually cold weather that covered large portions of the USSR from January through April. Production of the major roughage crops--hay, haylage, and silage--however, declined slightly in 1986.

This is the fifth straight year of improved feed availability in the Soviet Union. The quality of roughage feeds has also improved since the late 1970's and the trend reportedly continued in 1986.[10] Under Gorbachev, growth in livestock production is to come primarily from greater productivity per head rather than larger animal inventories. For this policy to be successful, more feed must be available per animal. There was some further increase in feed per animal unit in 1986/87, but this indicator remains roughly 20 percent below the long–term goal of 3.5 tons of feed or more (in oat equivalents) per head.

Feed Supply Management

Most of the increase in Soviet feed supplies between the late 1970's and 1985 was accounted for by sown roughage crops. In the meantime, there was little or no increase in grain feeding. In fact, the Soviets have substituted roughages for grain in cattle rations made possible by large investments in feed crop production and storage. During 1981–85, fertilizer use on sown roughage crops was reportedly twice as large as during the previous 5 years.[11] During the same period, storage facilities for silage, haylage, and feed roots more than doubled, and for hay increased four times, though storage for feed roots and hay remain far from adequate.

The Soviets have not pursued a similar substitution strategy of oilseed meal for grain in hog and poultry rations. Feeding efficiency, particularly for hogs, remains poor in part because of a shortage of protein in Soviet feed rations. Soviet specialists estimate that available protein is only 85–90 percent of what is required for optimal feeding efficiency. Indications of problems with protein supplies continue to surface. For example, the Director of the State Poultry Industry Trust, a top priority recipient of mixed feeds from the State, has complained recently of serious protein deficits in those feeds.[12] Also, protein- vitamin concentrates, provided by the State to local mixed feed operations for mixing with grain, continue to contain only

Table 6--Soviet feed supplies by type in oat-unit equivalent, January 1 standard animal units, and feed per standard animal unit

Units	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85 1/	1985/86 1/	1986/87 1/
				Million tons				
Total feed	391.5	395.5	384.9	412.9	425.0	428.9	438.1	445.9
Coarse 2/	76.4	82.4	80.2	86.2	93.7	88.4	96.3	96.8
Pasture	61.7	61.2	61.4	62.6	64.0	63.8	64.1	64.6
Succulents 3/	83.9	85.9	78.3	98.1	100.8	106.6	105.4	106.8
Concentrates 4/	169.5	166.0	165.1	166.0	166.6	170.6	172.2	177.8
				Million units				
January 1 total animal units 5/	148.7	149.4	150.8	153.4	156.3	157.0	156.9	158.3
				Tons				
Feed per standard animal unit	2.63	2.65	2.55	2.69	2.72	2.73	2.79	2.82

1/ Preliminary. Totals may not add due to rounding. 2/ Includes hay, haylage, and straw. 3/ Includes silage, green chop, potatoes, feed roots, melons, and beet pulp. 4/ Includes grain, millfeeds, oilmeal, fish and animal meal, grass meal, feed yeasts, and whole and skim milk. 5/ In terms of cows, conversion ratios as follows: Cattle (other than cows) 0.6, hogs 0.3, total sheep and goats 0.1, horses 1.0, and poultry 0.02.

two-thirds of their stipulated protein.[13] Greater use of protein concentrates should be an effective means of improving grain feeding efficiency.

Soviet imports of protein concentrates have remained below record since 1983 and well short of requirements. The most commonly cited explanation of this paradox is that the Soviets lack the appropriate handling and storage facilities for importing large quantities of oilseed meal. Furthermore, feeding practices and animal care may be so inefficient that the Soviets cannot achieve the full potential of the efficiency increases from more oilseed meal in the rations. Oilseed meal imports may be less economical than it would appear.

Handling problems or not, it is clear that the Soviet leadership has decided not to expand dependence on imported protein concentrates. This contrasts with the growth in import dependence for grain during the 1970's. In the last year, the State has ratified a "protein program" which aims to increase domestic production of protein by one-third between 1985 and 1990, indicating a priority for protein self-sufficiency. The strategies in the plan are not new, however. They call for expanded area for oilseed and pulse crops, larger sowings of leguminous rather than grass crops for hay production, and a doubling of single-cell protein production. These same policies have been only modestly successful in the past 5 years.

Livestock Intensification Practices

The emphasis on livestock intensification, or increased animal productivity, has implications for Soviet feeding practices. Can the Soviets pursue this growth strategy without renewed emphasis on grain feeding? Between 1978 and 1984, the share of grain in cattle rations declined. Over the same period, beef output per head (measured as annual output divided by beginning year inventories) declined. Given inefficiencies in Soviet livestock raising, it is unlikely that they can maintain significant near-term improvements in animal productivity without increasing the share of concentrates in cattle rations, and improving protein availability in hog and poultry rations (table 7).

Prospects for Soviet Feed Production

Although roughage crop area may increase somewhat in 1987, further increases in the future are unlikely. Thus, production gains will likely result almost entirely from higher yields. Yields of roughage crops should continue to increase in 1987, due in large part

Table 7--USSR feed-conversion coefficients (kilogram of oat-unit equivalent/ kilogram of output)

Product	1970	1980	1983	1984	1985
Beef	11.5	13.4	13.2	13.5	13.5
Pork	9.2	9.2	8.8	8.8	8.8
Milk	1.4	1.5	1.55	1.55	1.6
Broilers 1/	4.6	4.3	4.1	NA	4.0
Eggs 1/	2.8	2.0	1.9	NA	1.9

NA = Not available. 1/ Ptitseprom system (state poultry industry) only. Eggs--oat units per 10.

to added fertilizer applications. Hay and silage crops, which were both affected by summer drought in 1986, are expected to rebound in 1987 without a repeat of last year's dryness, though hay and haylage production is now being threatened by this year's late spring.

Another major source of feed in the USSR are pastures. The USSR possesses tremendous pasture area, but feed production increases from it will likely be small. Most of Soviet pastureland is in arid regions of Kazakhstan and the Russian Republic. Yield potential is so low that fertilizer use is not justified. Other means of increasing pasture production, including improved seeding and expensive land improvement work, have not received much attention at the farm level.

Given continued increases in fertilizer use and more normal summer precipitation this year, total Soviet feed supplies should increase roughly 2 percent in 1987/88, in line with the average annual growth rate of the last 6 years. The late spring could well reduce production of hay and haylage though. If grain feeding expands, or if summer weather conditions are unusually favorable, the increase in feed supplies could be larger than 2 percent. *(Edward Cook)*

Livestock Economy Improves

The USSR achieved noticeable improvement in livestock sector performance in 1986. Preliminary data indicate livestock production increased about 3 percent, primarily through better animal productivity rather than expanded inventories. Larger improvements than in preceding years were recorded in milk and egg yields, and in average daily weight gains for hogs and cattle. The production expansion outstripped increased feed availability, indicating marginal improvements in feeding efficiency. Livestock output growth should slow in 1987 because of a smaller increase in feed supplies than last year and an exceptionally cold 1986/87 winter.

Inventories Up Little

During 1986, hog inventories rose to a record level (table 8). Otherwise, livestock inventory changes were less than 1 percent. The increase in poultry numbers, traditionally the fastest growing category, was the smallest in over a decade. The trend of the last 3 years indicates less emphasis on expanding animal inventories.

Modest growth in inventories is in keeping with the call to increase production per head rather than continuing to rely primarily on herd expansion. According to Soviet

Table 8--January 1 livestock numbers and animal units, USSR

Year	Cattle		Hogs	Sheep	Goats	Horses	Poultry	Total animal units 1/
	Total	Cows						
				Million head				
1971	99.2	39.8	67.5	138.0	5.4	7.4	652.7	130.5
1976	111.0	41.9	57.9	141.4	5.7	6.4	734.4	136.5
1981	115.1	43.4	73.4	141.6	5.9	5.6	1,032.4	149.4
1982	115.9	43.7	73.3	142.4	6.1	5.6	1,067.5	150.8
1983	117.2	43.8	76.7	142.2	6.3	5.6	1,104.5	153.4
1984	119.6	43.9	78.7	145.3	6.5	5.7	1,126.1	156.3
1985	121.0	43.6	77.9	142.9	6.3	5.8	1,143.0	157.0
1986	120.9	42.9	77.8	140.8	6.5	5.8	1,165.5	156.9
1987	121.9	42.5	80.0	2/ 141.5	2/ 6.5	2/ 5.8	2/ 1,170.0	2/ 158.1

1/ In terms of cows. Conversion ratios as follows: Cattle (other than cows) 0.6; hogs 0.3; total sheep and goats 0.1; horses 1.0; and poultry 0.02. 2/ Estimate.

specialists, the traditional inventory expansion strategy is too costly in terms of housing, equipment, and labor. Furthermore, feed supplies remain inadequate. At current inventory levels and feed availability, too great a share of feed is spent on animal maintenance and not enough on output.[14] To redress this situation requires that feed supplies increase more rapidly than livestock numbers.

Large Productivity Advances

The strategy of intensification appears to have paid off in 1986. Based on preliminary data, the value of livestock production (in constant prices) grew at least 3 percent. This compares with 0.8 percent growth in inventories and an estimated 2.1 percent in feed supplies in 1985/86. Significant increases were claimed in the socialized sector in average daily weight gain for hogs and cattle, and in milk and egg yields.[15] This sector accounts for over 70 percent of Soviet livestock production, with the remainder produced on household plots.

Preliminary end-of-year data indicate a 3.3-percent increase in meat production (table 9). However, the end-of-year economic report states that the socialized sector increased meat production by 8 percent. For these two figures to be consistent, private sector production must have fallen by 9 percent. Such a 1-year decline is highly unlikely. A possible explanation is that contract arrangements between the private and socialized sectors may have greatly expanded. Under these arrangements, animals previously considered in the private sector could be counted in the socialized sector. Another possible explanation is that the figure for 1986 meat production will eventually be revised upward to as much as 18 million tons. Similar revisions occurred for 1983 and 1984.

Even without revision, the meat production data indicate a notable improvement in per head productivity since the number of cattle and hogs slaughtered in 1986 likely did not increase over the 1985 figures. Poultry productivity also likely improved, with output up 5 percent and inventories up 1 percent.

Similar improvements were noted in milk and eggs. Milk yields in 1986 (including the private sector) are estimated to have increased nearly 5 percent to a new record of 2,440 kilograms per cow, the fifth straight year of improvement.[16] The increased yields resulted from improved feed supplies, continued cross-breeding with imported Holstein stock, and culling of low-producing cows. Milk production increased 2.5 percent to 101.1 million tons, according to preliminary data. These figures may eventually be raised slightly. Egg production increased about 4 percent. More than half the increase likely resulted from higher yields, which reached an estimated 223 eggs per layer in the socialized sector. Preliminary data indicate further declines in 1986 in private sector milk and egg production. Most, if not all, of this decline might be accounted for by expanded contract arrangements whereby production from the

Table 9--Production of principal livestock products, USSR

Year	Meat 1/						Milk	Wool 2/	Eggs
	Total	Beef and veal	Pork	Mutton, lamb, and goat	Poultry	Other			
	1,000 metric tons								Millions
1966-70 average	11,583	5,187	4,327	992	853	224	80,553	NA	35,840
1971-75 average	14,004	5,985	5,394	972	1,335	318	87,446	425	51,427
1976-80 average 3/	14,843	6,827	5,009	882	1,835	290	92,662	442	63,133
1981	15,199	6,627	5,220	846	2,255	251	88,874	460	70,855
1982	15,368	6,618	5,273	816	2,425	236	91,044	452	72,409
1983	16,449	7,011	5,760	837	2,596	245	96,463	462	75,110
1984	16,985	7,244	5,927	866	2,686	262	97,906	465	76,482
1985	17,131	7,370	5,853	827	2,816	265	98,608	447	77,255
1986	4/ 17,700	5/ 7,700	5/ 6,000	5/ 850	5/ 2,950	5/ 200	4/ 101,100	4/ 465	4/ 80,300

1/ Carcass weight, including fat. 2/ Physical weight. 3/ Revision based on the average published in Narodnoe khozyaistvo SSSR v 1982 (National Economy of the USSR 1982). Is not consistent with average derived from last published figures for each year. 4/ Preliminary Soviet figure. 5/ ERS estimate.

private plots are attributed to the socialized sector.

Consumption Increasing

The share of livestock production sold to the State increased further in 1986, continuing the pattern of recent years. The higher share of sales allowed industrial production of meat to increase 7 percent, while butter and cheese increased 6 and 4 percent. Though the State has placed priority on expansion of fluid and whole milk products, an adequate infrastructure is lacking and excess consumer demand for butter persists. Priority has also been placed on expanded production of milk replacer for calf rations. In 1985, production of milk replacer (dry and fluid) reached just 1.3 million tons. In comparison, for the last 10 years 12–14 million tons of whole milk have been fed annually.[17]

Per capita meat consumption increased an estimated 2.5 percent in 1986 to 63 kilograms (table 10). Consumption of milk and milk products (including butter in whole milk equivalent) increased an estimated 2 percent to 330 kilograms per capita. Egg consumption grew by slightly more than 2 percent to 266 eggs per person. Despite these increases, supplies of meat and milk products remain well short of what consumers demand.

Was 1986 the Beginning of a New Trend?

Livestock production is likely to grow at a slower rate in 1987. The increase in beginning year feed supplies was not as great as it was in 1986. In particular, availability of three major roughage feeds--hay, haylage and silage--was no better than last year. Also, the 1986/87 winter was exceptionally severe, and will reduce livestock production through increased maintenance requirements.

The major question remains whether to expect the same sort of productivity increases in 1987 as in 1986. Attempts are continuing to introduce technical and managerial improvements in livestock production (see related article). Other broader policies which address improved integration and labor organization in the agro-industrial complex could translate into improved livestock performance.

The potential for improved productivity in Soviet livestock is large when compared with Western performance. For example, milk yields remain less than half those in the United States and per head productivity of hogs and cattle about 30 and 35 percent less (annual production divided by beginning-year inventories). The USSR has also failed to reduce the amount of feed required per unit of production in the last 15-20 years, something that most developed nations have realized.

Without continuation of the productivity improvements registered in 1986, livestock output will probably increase approximately 1–2 percent in 1987. However, if the Soviets match 1986, then livestock production could grow by nearly as much as last year. This will

Table 10--USSR consumption norms of selected food products and per capita consumption

Year	Meat and fat	Fish and fish products	Milk and milk products 1/	Eggs 2/	Sugar	Vegetable oil	Potatoes	Grain 3/	Vegetables and melons	Fruit and berries
					Kilograms					
1950	26	7.0	177	60	11.6	2.7	241	172	51	11
1960	40	9.9	240	118	28.0	5.3	143	164	70	22
1970	48	15.4	307	159	38.8	6.8	130	149	82	35
1980	58	17.6	314	239	44.4	8.8	109	138	97	38
1981	57	18.0	304	247	44.5	9.1	104	137	99	40
1982	57	18.4	295	249	44.5	9.3	110	137	101	42
1983	59	17.4	313	256	44.3	9.6	109	134	102	44
1984 4/	61	17.5	319	258	44.0	9.5	108	133	102	45
1985	61	17.7	323	260	42.0	9.7	104	133	102	46
1990 plan	70	19.0	330-340	260-266	45.5	13.2	110	135	126-135	66-70
Consumption norm 5/	82	18.2	405	292	40.0	9.1	110	115	130	91

1/ Including milk equivalent of butter. 2/ Number. 3/ Flour equivalent. 4/ Vestnik statistiki, No. 3, 1986, p. 57. 5/ Narodnoe blagosostoyanie SSSR (National Welfare in the USSR), 1983, p. 165.

depend highly on improvements in feed rations. Dairy productivity likely will continue to increase. Breeding and management appear to be making up for the poor milk yields between 1970 and 1982.

Strong demand and record beginning-year inventories indicate meat production may grow 2-3 percent in 1987. Though plans for the rest of the 1980's emphasize beef and poultry, there should be more expansion in pork in 1987 than in the last few years because of the larger beginning-year inventories.

Milk production is expected to increase slightly less than 1986, with a further decline in inventories being more than compensated by yield increases. Results will depend greatly on spring and summer forage conditions. The long-term strategy in the dairy sector is to emphasize more efficient utilization of available raw milk, rather than major increases in its production. But this strategy is not expected to be practiced for a number of years.

Egg production increased by a surprisingly large amount in 1986, which allowed for full attainment of the State's egg consumption target established for 1990. Egg production should increase much more slowly in 1987, particularly with the feed requirements posed by the larger hog inventories. *(Edward Cook)*

Oilseed Output Unchanged in 1986

Soviet oilseed output should rise in 1987, possibly reaching 11 million tons, compared with an estimated 10.7 million tons in 1986. The increase will be largely attributable to a recovery in cottonseed, which accounts for over 45 percent of total oilseed production, expanded area of soybeans and rapeseeds, and improved sunflowerseed yields. Cottonseed production in 1986 fell to a 13-year low, offsetting the increases in sunflowerseed, soybean, and rapeseed (table 11). To raise the production of oilseeds, the Soviets have introduced and expanded a number of programs and incentives in the last 2 years.

Incentives Offered To Boost Production

Prior to 1986, only piecemeal measures were introduced to boost oilseed production, despite continued exhortations about the need to accelerate development. The excellent performance of the sunflowerseed, soybean, and rapeseed crops in 1986, however, could mark a new level of production. Credit likely goes to improved labor inputs which may have increased the effectiveness of intensive technology. In addition to the general efforts to improve discipline, cut alcohol abuse, and improve wage distribution, the Soviets added sales incentives in mid-1986 to further stimulate the production of oilseeds and sales to the State. Although the announcement came too late for farms to make significant adjustments in the 1986 growing season, sales to the State rose.

According to the Soviets, procurement plans for sunflowerseed for the country have gone unmet since 1973. The new measures specified that farms would be paid for sunflowerseeds and soybeans in the form of oilseed cake and mixed feed. Sales of high-quality sunflowerseed--better seeds with more oil--were eligible for additional bonuses. In 1985, a similar countertrade offer was introduced for sales of rapeseed. Payment in the form of processed feeds is a greater incentive than money, since cash does not always provide access to scarce inputs. Soviet authorities also announced bonuses in the form of countersales for sales of sunflowerseed that exceeded the 1981-85 average. Moreover, beginning in 1987 soybean sales above that average will also receive premiums from the State.

In 1979, intensive techniques were introduced on oilseeds to raise productivity by attempting to fully mechanize cultivation and harvesting. In 1985, 34 percent of the

Table 11--Oilseed production, USSR

Year	Sun-flower seed	Cotton-seed 1/	Soy-bean	Other 2/	Total
	1,000 metric tons				
Averages					
1971-75	5,974	4,295	471	249	10,989
1976-80	5,310	4,720	529	214	10,773
1981	4,678	5,279	491	151	10,599
1982	5,341	5,094	536	262	11,233
1983	5,063	4,815	560	265	10,703
1984	4,527	4,740	469	1/ 188	1/ 9,924
1985	5,234	4,815	458	1/ 268	1/ 10,775
1986	5,258	4,475	703	1/ 267	1/ 10,703

1/ Estimate. 2/ Does not include oilseeds from fiber flax and hemp.

sunflower area, 56 percent of the soybean area, and 13 percent of the rapeseed area were reportedly under intensive technology.[18]

Production in 1987 Should be Up

Cottonseed production is almost certain to increase in 1987, after suffering a severe drought last year. Production in 1986 fell 7 percent to an estimated 4.48 million tons, the poorest performance since 1973. As a result of the abnormally low snowfall in the mountains during the 1985/86 winter, cotton--cultivated entirely on land requiring irrigation--faced a severe water shortage last year which decreased yields to their lowest level in 16 years. Cotton area rose about 5 percent in 1986, but is unlikely to increase this year, reflecting reported Soviet intentions to stabilize area sown.

Production of sunflowerseed should continue to edge upward in 1987 as yields improve. Although output of sunflowerseed rose only slightly in 1986 to about 5.26 million tons, it was the most since 1982. The national yield last year--up 5 percent from 1985--was the best in over a decade. The extremely hot and dry weather in 1986 contributed significantly to the excellent yield because many of the typical diseases that retard the crop were unable to develop. Sunflowerseed area decreased 5 percent in 1986, and likely will remain about the same in 1987, with other oilseeds receiving priority. Even if sunflowerseed yields continue to improve, the 1987 production target of 6.4 million tons is unlikely to be met.

Output of soybeans should increase this year, following 1986's gains. Production in 1986 increased for the first time in 3 years, up a dramatic 54 percent to 703,000 tons. Increased output is attributable to a nearly 50-percent rise in yields and to slightly more area, including the expansion of combined sowing of soybeans with corn. As farm managers continued to resist growing soybeans because they are unfamiliar with the crop, 1986 area rose only about 1 percent above 1985. In Kazakhstan, however, soybean area reportedly increased by over 50 percent to over 32,000 hectares in 1986. Soybean area is likely to increase further this year, but another major increase in yields is not likely, making the 1987 production target of 831,000 tons very ambitious.

As with soybeans, rapeseed output should increase somewhat in 1987, largely from expanded area. Production rose 49 percent to a record 110,000 tons in 1986. In contrast to 1986's performance, the 1987 target for rapeseed is still set at a totally unrealistic 690,000 tons. Rapeseed area increased about 15 percent to 144,000 hectares. While rapeseed area is slated to grow dramatically over the next few years, the pace of expansion continues to be well below the expectations of Soviet agricultural authorities. Rapeseed yields, up about 25 percent in 1986 to 7.6 tons per hectare, are unlikely to increase as much in 1987.

Meal and Oil Output Down in 1987

Domestic oilseed meal output in 1987 is expected to drop to about 3.9 million tons (soybean meal equivalent) due mainly to reduced soybean imports in year 1986. In 1986, oilseed meal production at 4.5 million tons was about a third above 1985 output, due primarily to large soybean imports and a good 1985 oilseed crop. Vegetable oil output rose about 20 percent to 2.9 million tons in 1986, the highest level in about a decade. Production this year is estimated at about 2.8 million tons. Imports of vegetable oil are forecast to rise 20 percent in 1987 because of a sharp increase in consumption and decreased imports last year. *(Christian J. Foster)*

Sugarbeet Production Down In 1986

Sugarbeet production in 1987 may recover from 1986's shortfall (table 12). Although planting is about 3 weeks behind normal, area is expected to reach about the same as last year's, and if good weather prevails production could reach 80–84 million tons. The 1986 crop suffered from dry weather during much of the growing season, although rainfall later in the season allowed a partial recovery. Dry weather in the fall speeded up harvest time and increased sugar content of the beets. Soviet reports implied that losses during transport were not as high as in the past.

The use of intensive technology on sugarbeet area may help maintain or boost 1987 yields. The plan calls for 2.8 million hectares to be grown under this program, about the same as in 1986. The intensiveness program was introduced on sugarbeet farms in the early 1980s, under the rubric ICT. The

Table 12--Area, yield, and production of selected crops, USSR

Year	Seed-cotton	Sugar-beets	Sun-flowers	Fiber flax 1/	Potatoes	Vege-tables	Fruit, berries, grapes
			1,000 hectares				
Area							
1966-70 average	2,527	3,582	4,837	1,341	8,238	1,440	4,753
1971-75 average	2,810	3,527	4,474	1,234	7,953	1,601	4,855
1976-80 average	3,043	3,745	4,471	1,156	7,020	1,629	4,804
1981	3,168	3,633	4,235	946	6,854	1,703	4,795
1982	3,188	3,526	4,250	1,014	6,856	1,715	4,809
1983	3,192	3,491	4,266	1,063	6,882	1,725	4,830
1984	3,347	3,463	3,907	1,064	6,830	1,744	4,470
1985	3,316	3,411	4,053	1,014	6,432	1,665	4,333
1986	3,475	3,399	3,848	975	6,373	1,698	NA
			Metric tons per hectare				
Yield 2/							
1966-70 average	2.41	22.8	1.32	0.34	11.5	13.2	2.0
1971-75 average	2.73	21.7	1.32	0.37	11.3	13.7	2.6
1976-80 average	2.93	23.6	1.19	0.34	11.8	15.2	3.2
1981	3.04	16.8	1.10	0.28	10.5	15.0	3.6
1982	2.91	20.2	1.25	0.41	11.4	16.5	3.8
1983	2.89	23.4	1.18	0.44	12.0	16.1	3.8
1984	2.58	24.7	1.15	0.37	12.5	17.0	4.2
1985	2.64	24.1	1.29	0.35	11.3	15.7	3.8
1986	2.37	23.3	1.36	0.38	13.7	16.4	NA
			1,000 metric tons				
Production							
1966-70 average	6,099	81,118	6,389	458	94,813	19,472	9,710
1971-75 average	7,667	75,984	5,974	456	89,782	22,974	12,393
1976-80 average	8,932	88,732	5,309	393	82,571	26,313	15,177
1981	9,636	60,844	4,678	263	72,139	27,096	17,287
1982	9,282	71,371	5,341	414	78,185	29,993	18,372
1983	9,212	81,845	5,063	471	82,908	29,486	18,392
1984	8,619	85,433	4,527	394	85,515	31,502	18,548
1985	8,755	82,064	5,234	352	73,009	28,050	16,427
1986	8,233	79,299	5,258	366	87,186	29,740	NA

NA = Not available. 1/ Flax grown for fiber production. 2/ Soviet reported yields vary from calculated yields in some instances.

system called for the use of more machinery, mineral fertilizers, and hybrids, and lower labor expenses. Soviet reports claim that in 1985 intensive technology covered 70 percent of the beet area and was responsible for an additional 4.3 tons per hectare.[19] However, despite intensive technology yields have failed to reach the record levels achieved in the mid-1970's.

In 1986, as an incentive for sales to the State, beet growers could buy 15 kg of molasses, 10 kg of mixed feed, and 600 kg of pulp for each ton of sugarbeets sold to the State. The incentives were set higher for procurements exceeding the average achieved in the 11th 5-Year Plan. The measure appears to have had little impact, since 1986 sales to the State were likely close to the 90 percent average of the past decade.

Sugar production in 1987 will depend partly on the success of efforts to increase the sugar content of beets. Total refined sugar output in 1986 was up 8 percent over 1985, with production from sugarbeets estimated to be up about 11 percent (table 13). Despite the poor harvest, sugar content was high because of dry weather just before the harvest and better organization in the harvesting process. In mid-November, a Soviet newspaper reported an average extraction rate of 11.8 percent. The final 1986 figure may be lower, but will still probably exceed extraction rates of the past 10 years. The average for 1976-80

Table 13--USSR sugar production and trade 1/

Year	Industrial production		Imports			Exports refined
	Total	Of which from beets	Raw		Refined	
			Total	From Cuba		
	1,000 metric tons					
1966-70 average	10,203	8,638	2,082	2,081	2	1,097
1971-75 average	9,694	7,771	2,154	1,812	82	249
1976-80 average	10,854	7,370	3,845	3,374	439	139
1981	9,491	5,900	4,190	3,090	963	169
1982	12,070	6,800	6,161	4,224	1,115	247
1983	12,394	8,000	4,797	2,966	1,129	152
1984	12,464	7,900	4,972	3,508	732	189
1985	11,799	7,600	4,305	3,685	195	163
1986	12,700	2/ 8,400	2/ 5,000	2/ 3,800	2/ 200	2/ 200

1/ All data on refined basis except raw imports. The factor for converting raw to refined is 0.92.
2/ Estimate.

was 9.6 percent; for 1981–85, 10.6 percent. *(Carolyn Duff)*

Cotton Output Down Again in 1986

Severe drought in Central Asia contributed to a 6–percent drop in Soviet cotton production in 1986. The 8.23-million-ton crop was the smallest in 10 years (table 14). Yields were the lowest since 1969 and 15 percent below the 1981–85 average. Fiber outturn is expected to drop 7 percent. As a result of the production decline, cotton imports are expected to double over 1985, and net exports to drop to their lowest level since 1971.

The severe water shortage in Central Asia was attributed to smaller-than-normal snowpack in the Pamir and Altay mountains leading into the growing season. Precipitation in the mountains between October 1985 and March 1986 was only 70-80 percent of normal and the water flow in the Kashkadar'ya river basin was reported between 40–60 percent of normal.[20]

Table 14--USSR lint cotton production and trade 1/

Year	Production	Imports	Exports	Domestic supplies 2/
	1,000 bales 3/			
1978/79	11,907	354	3,756	8,505
1979/80	12,833	296	3,770	9,359
1980/81	13,498	153	4,070	9,581
1981/82	13,277	110	4,295	9,092
1982/83	11,939	400	3,300	9,039
1983/84	12,065	783	3,202	9,400
1984/85	11,876	800	3,200	9,476
1985/86	12,100	500	3,100	9,600
1986/87	11,200	1,000	2,800	9,400

1/ USDA estimates. Year beginning August 1.
2/ Production minus net exports. 3/ 480-pound bales.

Area expansion of 3.3 percent was surprisingly large, especially since government policy in the cotton growing republics emphasizes fodder and grain. Since 1980, cotton area growth in these republics has averaged 1.3 percent annually, while the land for fodder and grain crops expanded 4.5 percent each year. The cotton area increase further stretched already low water resources. The unexpected increase might, in part, reflect more accurate accounting of cotton area. Numerous Soviet newspaper articles reported that farms planted cotton on fields designated for other crops in an effort to meet production and yield targets.[21]

More light was shed on the degree of corruption and the extent of cotton production overreporting in the Soviet Union. Articles indicate that between 1978 and 1984 500,000 to 900,000 tons of raw cotton production were falsified annually, for a total of 4.5 million tons in Uzbekistan alone.[22] Reports also indicate that Turkmenistan and Kazakhstan also suffered significant amounts of overreporting, though no figures are available.[23] Based on the Uzbek figures alone, average Soviet cotton production between 1978–84 may have been closer to 8.5 million tons instead of the officially reported 9.3 million tons. Since reports suggest that only raw production was exaggerated, the apparent decline in Uzbekistan's annual ginning rate to 29 percent is likely overstated. More importantly when comparing

production in the last 3 years against adjusted raw production numbers for 1978–84, the Soviet decline is not nearly as severe. Only the 1986 harvest falls below the 1978–84 average, and 1986 was a drought year.

In 1987, although the extremely wet spring delayed sowing progress by two weeks, it augmented moisture supplies. Although sown area may fall somewhat, the improved water situation should result in a higher crop than last year's drought damaged one. For 1987, preseason estimates for raw cotton production are 8.8 million tons and lint production around 12.2 million bales, with only a slight increase in area. The Soviet target for lint production in 1990 is 13.3 million bales.[24]

Recently introduced policies emphasizing quality fiber outturn are reportedly effective. These policies continue, however, to discourage machine-picking and in 1986 only about 40 percent of the Uzbek crop was machine-picked against a target norm of 60 percent. Basing payment on quality and combining the growing and ginning administrations into one organization are cited as the official reasons for 1986's higher ginning rate. The same package of incentives to increase quality and lint outturn has encouraged production of extra long-staple cotton (ELS). In 1986, ELS production at 1.174 million tons raw basis greatly exceeded plan. ELS, however, has a lower ginning rate than medium-staple cotton and its growing share has likely had a negative influence on the overall ginning rate. The fact that the real ginning rate may have remained stable despite ELS's growing share suggests real gains in medium-staple quality.

Production of chemical fibers in 1986 increased almost enough to offset the cotton lint decline. The rebound of 7.6 percent over 1985's production decline was likely a result of improved petroleum availability. Chemical fiber production is projected to reach 1.85 million tons by 1990, assuming continued improvement in oil production.[25]

Total per capita cloth availability likely increased slightly over 1985's 46.2 linear meters. Cloth availability is unlikely to be adversely affected by 1986's decline in lint production because recent domestic fabric production has been augmented by increased fabric imports. The Soviets project total fabric production of 14,500 million square meters by 1990, a figure consistent with lint and chemical fiber production forecasts.[26] *(Robert Koopman)*

GRAIN IMPORT DROP EASES CURRENCY CRUNCH

Soviet agricultural imports in 1987 will likely be close to 1986's estimated $15 billion (table 15). Despite the USSR's fourth largest grain crop and record feed crop, the Soviets are importing grain at a rate that may push 1987 grain imports above the 1986 level. Although the volume may rise slightly, a decline in unit values may hold the overall grain import bill below 1986's. Of the Soviets' major imports, only sugar is expected to increase in 1987.

The low agricultural import expense forecast for 1987, plus the possible stabilization and recovery in world energy prices and the value of the U.S. dollar, mean the Soviet hard currency squeeze may not be worse than last year.

Soviet agricultural exports in 1986, which consisted primarily of grain purchases abroad for direct shipment to Cuba and other dependencies, likely remained close to 1985's $2.1 billion (tables 16 and 17).

Table 15--Summary of USSR agricultural imports, by value 1/

Commodity	1984	1985	1986 2/
	Million dollars		
Grain and products	6,991	6,044	3,100
Sugar	4,318	4,072	4,600
Livestock and products 3/	2,026	2,019	1,750
Fats and oils	758	723	550
Fruits, vegetables, and nuts	1,243	1,318	1,200
Tobacco and products	879	844	900
Oilseeds and oilmeal 2/	360	418	650
Other	2,269	2,253	2,200
Total	18,844	17,690	14,950

1/ Derived from USSR official data converted at $1.23 in 1984, $1.20 in 1985; ERS estimates for 1986. 2/ Estimates. 3/ Includes furs, raw hides, wool, and animal fats including butter.

Table 16--USSR agricultural exports, by value

Commodity	1983	1984	1985
	Million dollars 1/		
Wheat	296.3	265.0	189.3
Barley	5.1	6.1	16.4
Corn	23.3	32.8	27.0
Oats	1.7	1.4	1.9
Other grain	--	--	--
Flour-milling products and pulses	102.2	128.3	141.8
Subtotal	428.6	433.6	376.3
Meat and products	40.8	40.3	39.6
Milk and products	48.4	41.5	43.5
Animal fats including butter	68.5	70.3	69.5
Wool	17.7	14.6	24.8
Furs	106.1	124.4	135.4
Raw hides	4.5	8.0	39.9
Vegetables, fruit, and nuts	48.3	44.4	42.5
Sugar, refined	46.5	58.0	36.1
Confectionaries	8.6	7.7	8.4
Beverages	83.5	72.6	92.9
Tobacco products	8.3	6.0	5.8
Oilseed, tobacco, and other raw materials	74.0	92.4	70.8
Natural fibers	1,218.8	1,036.4	990.0
Vegetable oils	55.2	61.0	82.4
Technical fats and oils	7.4	3.7	8.4
Seeds and planting materials	41.1	38.2	48.5
Total	2,306.3	2,153.2	2,114.9

-- = Negligible or none. 1/ USSR official data converted at $1.35 in 1983, $1.23 in 1984, and $1.20 in 1985.

Figure 5
USSR Agricultural Imports

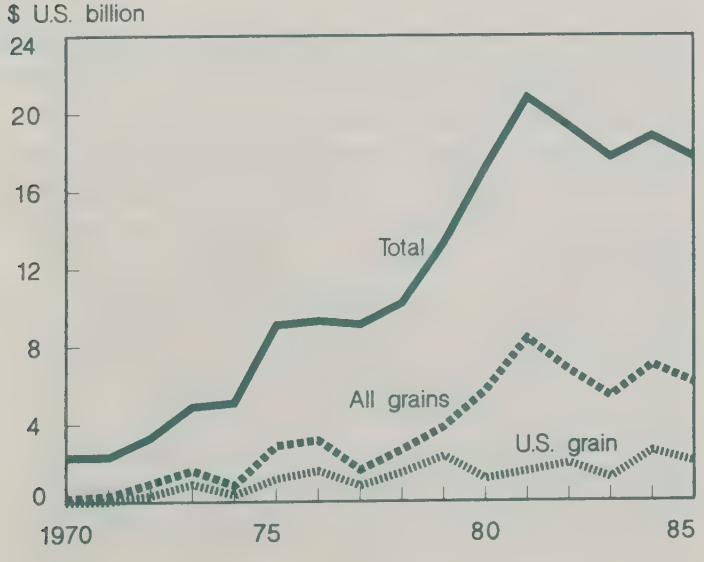


Table 17--USSR agricultural exports, quantities of principal items

Commodity	1983	1984	1985
	1,000 metric tons		
Wheat 1/	1,689	1,614	1,273
Rye 1/	--	--	--
Barley 1/	45	50	135
Corn 1/	175	235	217
Oats 1/	12	9	13
Flour 2/	292	331	307
Groats	125	210	379
Pulses	47	61	64
Subtotal	2,385	2,510	2,388
Meat and products	25	27	27
Butter	17	17	17
Hides and skins 3/	954	1,684	23,461
Sugar, refined	152	189	163
Tea	26	30	18
Cotton, lint	774	642	631
Flax tow	8	13	8
Vegetable oil, edible	110	106	135
Starch	20	25	26

-- = Negligible or none. 1/ ERS estimates; official USSR sources report only value. 2/ Flour in wheat equivalent at 72 percent. 3/ Thousands.

The lower agricultural import bills are fortuitous for Soviet leaders because Soviet export earnings (ruble value) and, most critically, hard currency earnings fell with the decline in world energy prices. The decline in agricultural imports from 1985 to 1986 of over $2.5 billion occurred as the estimated value of grain imports fell from $6 billion to somewhat over $3 billion (figure 5 and table 18). The volume of grain imports likely declined about 40 percent (table 19). The unit value of grain imports declined an estimated 15 percent. The decrease was not greater because Soviet grain imports were heavy in the first half of the year, prior to a dramatic drop in world grain prices (figure 6).

Agriculture's share of the total import bill is estimated to have fallen about 20 percent in 1986 with grain's share down by more than 50 percent to an estimated 3- 4 percent of total Soviet imports (figure 7). Even more important was the decline of the grain import bill in offsetting the drop in hard currency export earnings in 1986. Despite the decline in hard currency earnings, grain imports as a proportion of hard currency export earnings fell from an estimated 23

Table 18--USSR agricultural imports, by value

Commodity	1983	1984	1985
	Million dollars 1/		
Wheat	3,880.0	4,607.9	2,992.4
Barley	180.8	169.8	422.8
Corn	855.7	1,735.5	2,328.5
Other grain	3.9	85.5	64.8
Sorghum	226.9	217.0	141.7
Wheat flour	96.9	94.7	44.3
Rice, milled	118.3	80.5	49.8
Subtotal	5,362.5	6,990.9	6,044.4
Animals for slaughter	169.2	113.4	88.3
Breeding animals	9.6	14.9	16.3
Meat and meat products	1,369.7	1,092.3	1,026.2
Milk and milk products	92.1	84.6	90.6
Eggs and egg products	29.4	22.7	16.8
Animal fats including butter	423.8	287.8	289.9
Wool	564.9	354.6	465.4
Furs	3.5	2.6	3.1
Raw hides	60.2	53.5	21.9
Vegetables and potatoes	423.7	406.4	477.0
Fruit and berries, fresh	463.2	408.3	414.3
Fruit, dried	97.9	99.2	84.6
Fruit and berries, processed	210.7	207.3	217.9
Nuts	108.0	121.2	123.8
Sugar, raw	3,760.4	4,170.3	4,033.7
Sugar, refined	264.9	147.6	38.0
Coffee, cocoa, tea	632.7	881.8	898.6
Spices	37.4	46.6	66.9
Beverages	801.1	842.8	782.1
Tobacco, raw	322.6	291.5	279.3
Tobacco products	600.6	587.8	564.9
Oilseeds	398.9	237.4	247.8
Oilseed meal 2/	546.1	123.1	170.0
Natural fibers	351.7	334.1	334.7
Vegetable oils	312.3	526.2	537.4
Technical fats and oils	156.7	231.6	185.5
Seeds and planting materials	168.1	163.9	170.3
Total	17,741.8	18,844.4	17,689.6

1/ USSR official data converted at $1.35 in 1983; $1.23 in 1984 and $1.20 in 1985.
2/ Estimates.

Table 19--USSR agricultural imports, quantities of principal items

Commodity	1983	1984	1985
	1,000 metric tons		
Wheat 1/	23,001	28,162	20,133
Barley 1/	1,582	1,392	3,484
Corn 1/	6,433	12,429	18,717
Other grain 1/	12	--	--
Sorghum	2,078	1,990	1,452
Wheat flour 2/	548	579	264
Rice, milled	323	150	127
Subtotal	33,977	44,702	44,177
Meat and meat products 3/	985	805	857
Shell eggs 4/	530	451	378
Wool, scoured	147	90	109
Hides and skins 4/	2	1	1
Vegetables, fresh	181	158	190
Vegetables, canned	412	445	472
Fruit, fresh	1,123	1,100	1,122
Fruit, dried	85	103	81
Sugar, raw	4,797	4,972	4,305
Sugar, refined	1,128	732	195
Coffee	37	48	57
Cocoa beans	162	150	155
Tea	77	95	108
Tobacco	101	103	95
Cotton lint	177	166	187
Oilseeds	1,422	696	924
Oilseed meal 5/	2,411	530	1,035
Vegetable oil, edible 6/	708	696	813

-- = Negligible or none. 1/ ERS estimates; official USSR sources report only value. 2/ Flour in wheat equivalent at 72 percent. 3/ Does not include live animals. 4/ Million pieces. 5/ ERS estimate. 6/ Does not include linseed oil.

percent in 1985 to about 13 percent in 1986, the lowest level since 1974.

Energy exports accounted for 55-60 percent of Soviet hard currency earnings in the first half of the 1980's. The expectation in early 1986 was that earnings would plummet $6-7 billion, possibly more, primarily from lower energy prices, but also because of a decline in the volume of oil exports brought on by lagging domestic production and growing domestic demands. However, hard currency earnings did not fall as much as forecast. The Soviets recovered from their oil production slump with 615 million tons in 1986, up from 595 million tons in 1985. Oil exports also rose. Although the price of USSR export blend crude oil dropped from $27 per barrel in January 1986 to $15 per barrel in December, the slide was slower than for other oil exporters (figure 8). Based on Soviet information regarding imports and exports, the decline in hard currency earnings in 1986 may

Figure 6
U.S. Gulf Prices for Wheat and Corn

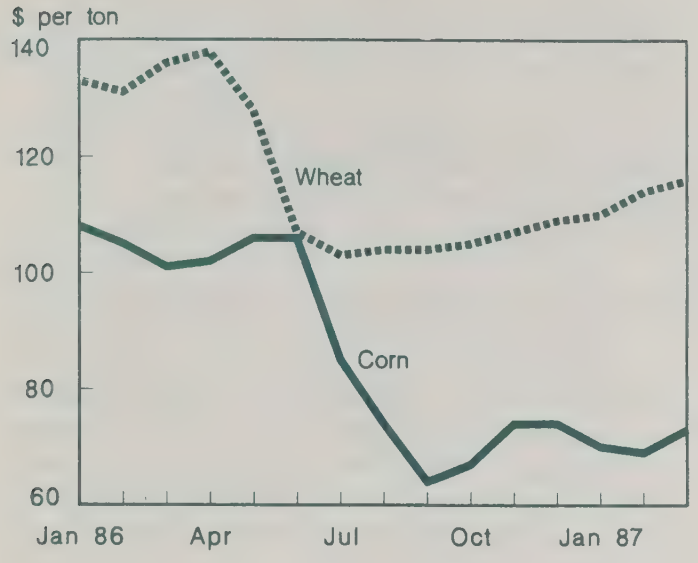
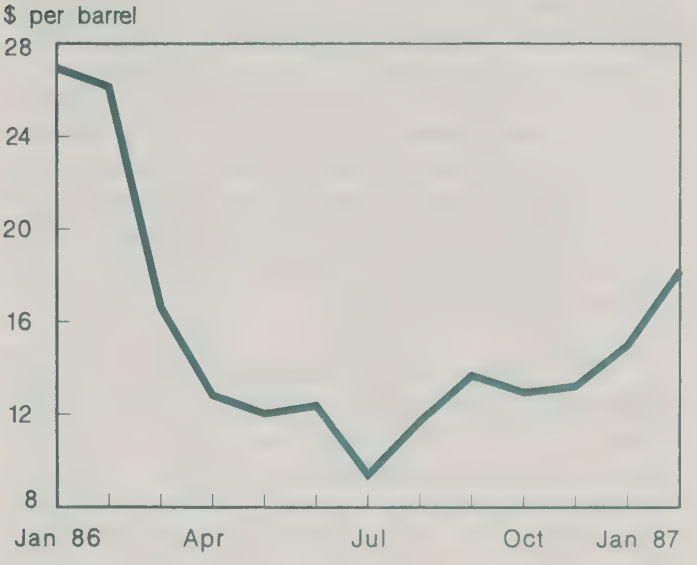


Figure 8
USSR Oil Export Prices



be closer to $3-4 billion (table 20). One estimate has Soviet hard currency exports off only $2.2 billion from 1985.[27] Depending on the final figures, the decrease in grain imports from the West could more than offset such a loss.

The Soviets could cover some of the hard currency decline with increased gold sales and borrowing. Speculation in mid-1986 was that the Soviets would increase gold sales to 400 tons from about 200 in 1985, and less than 100 in 1984. According to one Government estimate, gold sales in 1986 were $3.8 billion, up from $1 billion in 1985. An option that the Soviets have, especially in the short term, is to increase their low debt level. One estimate puts borrowing through the first half of 1986 at $1.2 billion versus $1.5 billion for all of 1985.[28] However, according to preliminary estimates, net foreign borrowing only increased $0.4 billion in 1986, although net assets in Western banks declined $1 billion.[29] The Soviets, however, were apparently concerned that agriculture could not absorb all the loss. Despite the high priority placed on modernizing industry, the USSR cut total orders for Western machinery and equipment by approximately 50 percent in 1986 from 1985.[30]

Figure 7
USSR Agricultural and Grain Import Shares

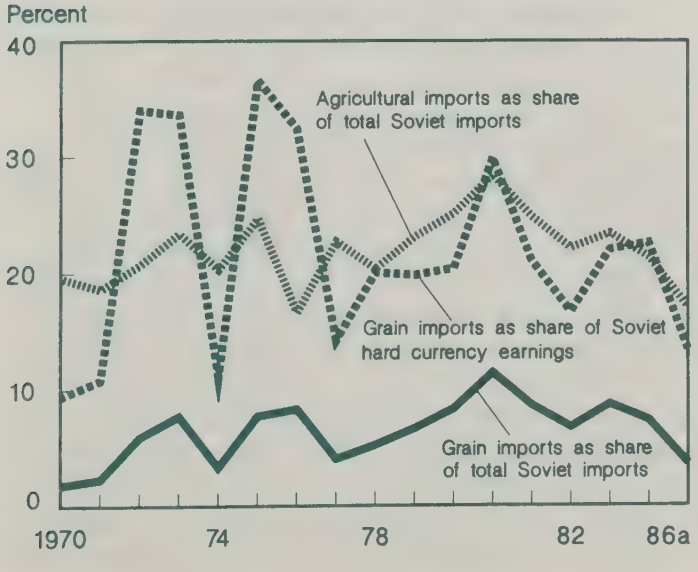


Table 20--USSR foreign trade

Direction	1984	1985	1986
	Billion rubles		
Exports to	74.4	72.5	68.3
socialist countries 1/	42.1	44.3	45.7
Western industrialized countries	21.3	18.6	13.1
developing countries	10.9	9.6	9.5
Imports from	65.4	69.1	62.6
socialist countries 1/	38.3	42.2	41.8
Western industrialized countries	19.6	19.3	15.9
developing countries	7.5	7.6	4.9

1/ Includes Eastern Europe, Cuba, Mongolia, North Korea, PRC, and Vietnam.

The Soviets more than offset the decline in earnings (ruble value) from exports to the developing countries by cutting imports from those countries by over 30 percent. Soviet earnings from exports to Eastern Europe reached a record level. However, the percent increase was the smallest in at least 7 years because lower world energy prices were mitigated by the method of pricing for the countries of the Council of Mutual Economic Assistance (CMEA). Prices are set based on a 5-year moving average.

The Soviets faced a further constraint on hard currency imports caused by the devaluation of the U.S. dollar. Soviet exports, partly because of the nature of the international energy market, are largely denominated in U.S. dollars and its imports in West European currencies. Some estimates in 1986 had the dollar devaluation costing the Soviets $1.5 billion. Oddly, despite the improved deal for U.S. grain caused by the depreciation in the dollar, the Soviets largely turned to other suppliers for grain.

Trade System Reform Undertaken

Among the recent changes in Soviet policies and programs to improve the economy is the decentralization of some functions of the monolithic Ministry of Foreign Trade, although the State still controls trade. The 21 ministries and 70 individual enterprises included in the new arrangements will be allowed to retain 90 percent of their export earnings, including hard currencies, to finance imports needed for modernizing their production. The decentralization, which will bring sellers and buyers into more direct contact, is aimed at increasing Soviet exports of manufactured goods (including those to the hard currency markets) and ensuring imports are equipment and technologies that will increase the quality and quantity of domestic Soviet output. In conjunction with the reorganization, the Council of Ministers created the State Foreign Economic Commission to oversee the work of the Ministry of Foreign Trade, the Foreign Trade Bank, and other ministries and committees connected with foreign relations.

The reform, however, affects only about 20 percent of Soviet trade because it leaves most fuel, raw materials, food, and some machinery and equipment under the control of the foreign trade ministry.[31] The reorganization affects a number of areas peripherally related to agriculture such as chemical, microbiological, machinery, and construction enterprises. In addition, certain organizations directly related to agriculture, generally concerned with inputs and processing, also are affected by the decentralization:

State Agro-Industrial Committee
Ministry of Tractor and Agricultural Machine Building
Ministry of Machine Building for Animal Husbandry and Feed Production
Ministry of Machine Building for Light and Food Industry and Household Appliances
Ministry of Fisheries

The new foreign trade organization in Gosagroprom will take responsibility for trade in the following goods from the organizations listed in parentheses:

Animal intestine cases (Sojuzpushnina)
Bloodstock cattle (Prodintorg)
Meat and dairy products, fats, other foodstuffs, and flavoring (Prodintorg)
Natural fibers (Exportljon)
Seeds and planting materials (Exportkhleb)
Silk fabric wastes (Novoexport)
Tobacco (Raznoexport)
Wine and spirits (Sojuzplodoimport)
Cosmetics and raw material for their production (Sojuzkhimexport)

Another facet of the changes in Soviet foreign trade policy is the increased interest in joint economic ventures with other countries, including those in the West. The Soviets say they have received about 100 proposals from the West. Soviet rules require that joint ventures be on Soviet territory, include at least 51 percent Soviet statutory capital, have Soviet citizens as chairpersons of the board and director general, and operate under Soviet labor codes. Western businesses see little advantage to using generally low productive Soviet labor to produce goods for export from the USSR. The perk they seek for providing technology and using Soviet labor is access to the largely untapped Soviet market. However, allowing Western firms to take hard

currency profits out of the USSR runs counter to Soviet interests. The Soviets see the joint ventures as a means to improve Soviet technology and earn hard currency through increased exports.

The Soviets cited the trade reforms as evidence of their increased interest in world trade when they requested participation in the current round of negotiations on the General Agreement on Tariffs and Trade (GATT), which began in September and must conclude within 4 years. The USSR declined to participate in the 1973–79 round of GATT negotiations. The GATT provisions are most relevant to manufactured products rather than raw material trade. The Soviets' increased interest in equipment and technology trade would coincide with interest in GATT membership. Although the Soviet request was refused, Soviet officials continue to express interest in membership and provide assurances that their trade policies and programs could be compatible with GATT requirements.

U.S. 1987 Exports Up From 13-Year Low

U.S. exports to the USSR in 1986 declined almost 50 percent from 1985 to $1.257 billion (table 21). This decline was accounted for by a $1.265-billion decrease in agricultural exports, which fell to a 13-year low both in nominal dollar value and in percent of total U.S. exports to the USSR (tables 22 and 23). Agricultural goods accounted for only 52 percent of the total compared to an annual average of over 72 percent during 1975–85 as the Soviets failed to meet the terms of the U.S.-USSR Long Term Grain Agreement. U.S. exports may increase in 1987 as increased grain exports offset a possible decline in soybean sales.

The Soviets renewed purchasing U.S. grains in late February 1987, with the first contract for corn since June 1986. By May 12, they had contracted for 3.6 million tons. The USSR did not sign a contract for U.S. wheat from October 1985 through April 1987. It ignored the United States' offer of an export subsidy during August and September 1986. However, the Soviets started purchasing U.S. wheat after a second subsidy offer was made in the spring of 1987. The Soviets have contracted for no U.S. soybeans since May 1986. Their soybean purchases for 1986 were

Table 21--U.S. trade with the USSR

Year	U.S. exports		U.S. imports	
	Total	Agricultural	Total	Agricultural
	Million dollars			
1972 1/	572	459	88	4
1973 1/	1,287	1,017	204	5
1974 1/	631	324	335	9
1975 1/	1,871	1,170	243	7
1976 1/	2,424	1,605	214	8
1977 1/	1,637	1,053	221	11
1978 1/	2,328	1,765	529	12
1979 2/	3,749	3,000	873	15
1980 2/	1,601	1,138	432	10
1981 2/	2,450	1,685	357	12
1982 2/	2,605	1,871	229	11
1983 2/	2,002	1,473	341	10
1984 2/	3,343	2,878	556	11
1985 2/	2,460	1,923	407	9
1986 2/ 3/	1,257	658	557	17

1/ Total and agricultural exports adjusted for grain and oilseed transshipments through Canada, West Germany, Belgium, and Netherlands. 2/ Total and agricultural exports adjusted for grain and oilseed transshipments through Canada.
3/ Preliminary.

Table 22--U.S. agricultural trade with the USSR, by quantity

Commodity	1984	1985	1986 1/
	Thousand metric tons		
Exports 2/			
Wheat	7,646.3	1,068.1	--
Corn	10,615.4	13,164.9	2,671.2
Soybeans	46.2	--	1,518.6
Vegetable oil	15.0	39.5	--
Cattle hides 3/	0.3	--	--
Almonds, shelled	8.6	28.2	12.4
Cotton, excluding linters	99.6	45.2	--
Tallow, inedible	55.5	80.1	50.0
Tobacco, raw	0.1	1.1	--
Imports			
Tea	0.4	--	0.1
Casein and mixture	0.2	0.1	0.3
Tobacco, unmanufactured	0.1	--	0.1
Beverages 4/	0.3	0.7	0.8
Cotton, excluding linters	--	--	--

-- = Negligible or none. 1/ Preliminary.
2/ Includes transshipments through Canada.
3/ 1,000 pieces. 4/ Excludes fruit juices.
Million liters.

Table 23--U.S. agricultural trade with the USSR, by value

Commodity	1984	1985	1986 1/
	Million dollars		
Exports 2/			
Wheat	1,170.8	162.3	--
Corn	1,450.4	1,556.4	290.7
Soybeans	14.0	--	313.0
Vegetable oil	9.1	27.2	--
Cattle hides	10.2	--	--
Fruit, nuts, and berries	24.5	67.7	37.6
Cotton	167.4	63.6	--
Tallow, inedible	29.7	38.1	15.5
All other	1.5	8.2	0.7
Total	2,877.6	1,923.5	657.5
Imports			
Casein and mixture	0.2	0.1	0.6
Furskins	10.2	7.8	14.4
Other animal products	--	--	0.2
Tobacco fillers	0.2	0.1	0.5
All other	0.5	0.6	0.9
Total	11.1	8.6	16.6

-- = Negligible or none. 1/ Preliminary.
2/ Includes transshipments through Canada.

1.519 million tons, up from zero in 1985 and the most since 1979's 1.8 million tons (table 24). Grain and soybeans have accounted for about 95 percent of U.S. agricultural exports to the USSR since the early 1970's. The Soviets also cut imports of U.S. cotton, almonds, vegetable oil, and inedible tallow in 1986.

With the decline in agricultural exports to the USSR in 1986, the United States had the same proportion of the market as in 1971 (1 percent), and the lowest share of Soviet agricultural imports (4 percent) since 1971. The Soviet Union, which had ranked as the second largest market for U.S. agricultural exports in 1984 and 1985, fell to twelfth position in 1986.

Although agricultural exports to the USSR have decreased dramatically, U.S. nonagricultural sales increased 12 percent because track laying tractors rose from zero to $38 million and drilling machinery parts climbed $11 million. U.S. nonagricultural imports from the USSR increased 36 percent to $557 million dollars, with gold up $153 million and crude petroleum up $46 million.

U.S. agricultural imports from the USSR reached a record $17 million. Hides and skins, which have accounted for about 90 percent of agricultural imports in the last 3 years, increased 85 percent to $14.6 million. Although accounting for only a small portion of the trade, imports of Soviet casein and mixtures were up almost five times and tobacco fillers almost three times. The environment for nonagricultural trade in 1987 has improved because of the changes the Soviets have made in their foreign trade organization and initiatives by the U.S. government and businesses.

Trade Related Meetings Show Mixed Results

Approximately 60 U.S. businesses participated in an international exhibition on food production technology in Moscow in September 1986. The exhibition, organized by the USSR Ministry of Machine Building for the Light and Food Industry and Household Appliances, included over 500 exhibitors from 27 countries. The U.S. display, the first under Department of Commerce sponsorship in the USSR since 1978, covered a wide variety of food products, equipment, and technology from raisin dryers, to fish portioners, to polyethylene baggers.

The U.S.-USSR Trade and Economic Council, a U.S. corporation representing 250 U.S. companies and about half that number of trade-related organizations in the USSR, met in New York in the second week of December. The focus of the meetings was the recent changes in the Soviet foreign trade system, including the new regulations on joint ventures with Western countries.

The ninth session of the U.S.-USSR Joint Commercial Commission, held the first week of December in Washington, D.C., ended with an announcement that the United States had agreed in principle to end its embargo on nickel and would help conclude contracts with Soviet organizations in areas including food processing and irrigation equipment and agricultural chemicals. Soviet contracts for U.S. machinery and equipment fell below $100 million in 1986 from $240 million in 1985, but remained above 1984's $70 million.[32] The U.S.-Soviet differences over Soviet performance with regard to the U.S.-USSR Long Term Grain Agreement were aired at the meeting. The tenth session will be held in Moscow this year.

Table 24--Major suppliers of selected agricultural goods to the USSR in 1985

Commodity	Quantity	Supplier and share
	1,000 metric tons	(Percent)
Grain and products 1/ 4/	44,177	United States (35), Argentina (18), Canada (15), France (10), Australia (6), Hungary (3), and others (13).
Sugar 2/	4,156	Cuba (82), Brazil (6), Hungary (1), Thailand (1), and others (10).
Fresh/frozen red meat	550	Romania (28), Hungary (11), France (10), Mongolia (6), New Zealand (4), Finland (2), Ireland (1), and others (38).
Poultry	141	Hungary (45), Romania (21), Bulgaria (8), Peru (7), France (2), and others (17).
Hides and skins 3/	1	Netherlands (55), Mongolia (29), Ireland (2), United States (1), and others (13).
Wool, scoured	109	Australia (56), New Zealand (18), Argentina (9), Mongolia (7), Uruguay (5), Afghanistan (4), and Syria (1).
Soybeans	839	Argentina (54), and China (46).
Soybean meal 4/	550	Brazil (27), and others (73).
Fresh fruit	1,122	Hungary (20), Cuba (14), Poland (13), Greece (9), China (7), and others (37).
Dried fruit	81	Afghanistan (36), Turkey (12), Romania (11), Iran (3), and others (38).
Fresh vegetables	199	Bulgaria (34), Poland (24), Romania (13), Egypt (7), Vietnam (5), and others (17).
Cotton lint	187	United States (24), Greece (11), Syria (9), Turkey (9), Colombia (7), China (6), Egypt (4), Peru (4), Afghanistan (4), and others (22).

1/ Grain includes all major grains, rice, and flour in wheat equivalent at 72 percent. 2/ Total Soviet sugar imports in terms of refined value converted at 0.92. 3/ Million pieces. 4/ Estimate.

The failure of the Soviets to fulfill the terms of the grain agreement was also discussed at the U.S.–Soviet grain consultation meetings June 9–10, 1986. The Soviets would not commit to accelerate wheat purchases to meet the 4–million–ton minimum required under the October/September agreement year.

The next grain consultation meeting, which generally would have been in the fall of 1986, was not held until February 23–24, 1987. U.S. representatives explained the rationale and operation of the Export Enhancement Program, including the specific offer made to the USSR in 1986, and the Soviets discussed their reasons for not accepting the offer. USDA's Export Sales office reported the first Soviet contracts for grain since June 1986 on the concluding day of the meetings--1 million tons of corn. *(Kathryn Zeimetz and Carolyn Duff)*

U.S. Grain Bonus To Raise Sales to USSR

U.S. grain sales to the USSR, which fell over 80 percent in value from 1985 to $291 million in 1986, could approach $800 million in 1987 as a result of wheat sales under EEP and also higher corn exports. The sharp decline in 1986 was largely the result of no wheat sales and only 2.7 million tons of corn versus 13 million tons in 1985. The unit value of corn exports was down only 9 percent because the Soviets made their purchases in the first half of 1986 before the sharpest declines in U.S. grain prices. The lower prices now prevailing will partially offset the increased volume of U.S. grain exports to the USSR in 1987.

The Soviets have agreed to the new offer of subsidized U.S. wheat which means that

they are expected to meet the terms of the U.S.-USSR Long Term Grain Agreement for the first time in 3 years. As of May 12, they had contracted for 3.64 million tons of corn and .95 million tons of wheat. As U.S. exports to the USSR dropped in 1986, the European Community (EC) and Canada dominated the Soviet market.

Soviet grain purchases from the United States reflected the overall pattern of Soviet buying in 1986 and the first half of 1987. Soviet contracting for U.S. grains dropped to zero in the second half of 1986. Likewise, their buying worldwide was much lighter than expected given the summer forecasts of Soviet grain production. USDA and other forecasts had Soviet production below 1985's level of 192 million tons. Possible explanations for the light imports were that the Soviets were delaying purchases in anticipation that world grain prices would fall further or that they would draw down domestic stocks rather than import to help ease the hard currency shortage caused by lower world energy prices.

The unusually low level of contracts and imports seemed more reasonable when the Soviets announced a grain crop of 210 million tons. However, during the 1986/87 winter Soviet purchases picked up pace, which seemed incongruent with the large domestic outturn. The renewed pace of sales in 1987 may have resulted from the much improved terms of trade plus renewed Soviet confidence that they were successfully dealing with the hard currency crunch. Like Western analysts, Soviet policymakers also may have forecast a more severe hard currency shortage than actually developed. By the beginning of 1987, Soviet officials had a better understanding of their hard currency situation. Soviet traders also had seen the terms of trade for grain versus oil improve in early 1987 to the levels that held in early 1986 (figure 9). In addition, the severe 1986/87 winter and the continued desire to improve livestock production may have further influenced their decision to pick up the pace of buying. Soviet imports of both coarse grains and wheat in 1987 are forecast to surpass 1986, despite a 1986 grain outturn well above the 1985 level.

Wheat Dominates Imports

Soviet wheat imports in 1987 are likely to exceed 1986's estimated 16 million tons, despite a wheat crop last year 18 percent larger than the 1985 harvest and the fourth largest ever (figure 10). Furthermore, procurements of quality wheat were reportedly up dramatically in 1986. Soviet wheat imports in 1986 declined about 20 percent from 20 million tons in 1985, partly reflecting 1985's larger wheat outturn compared to 1984's. Prompting wheat imports in 1987 could be the availability of wheat at highly subsidized prices, a decision based on the relative prices of wheat and coarse grains to increase the use of wheat for feed, and a policy to continue stock building.

Figure 9
Oil-Grain Terms of Trade

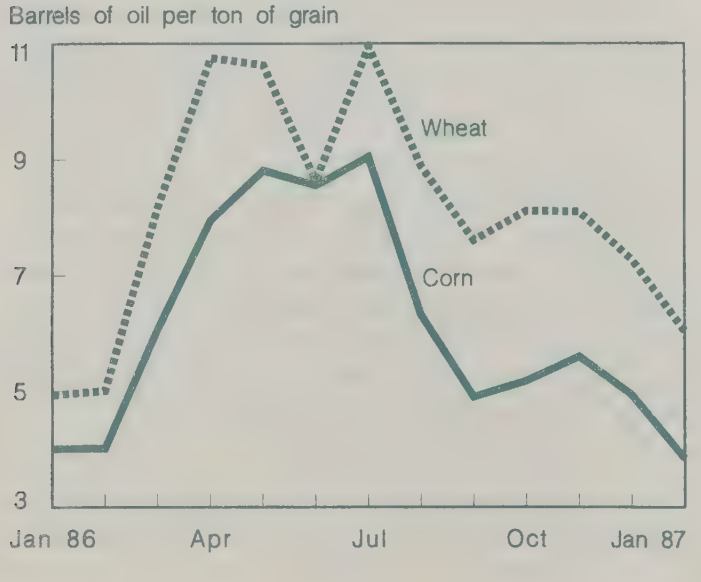
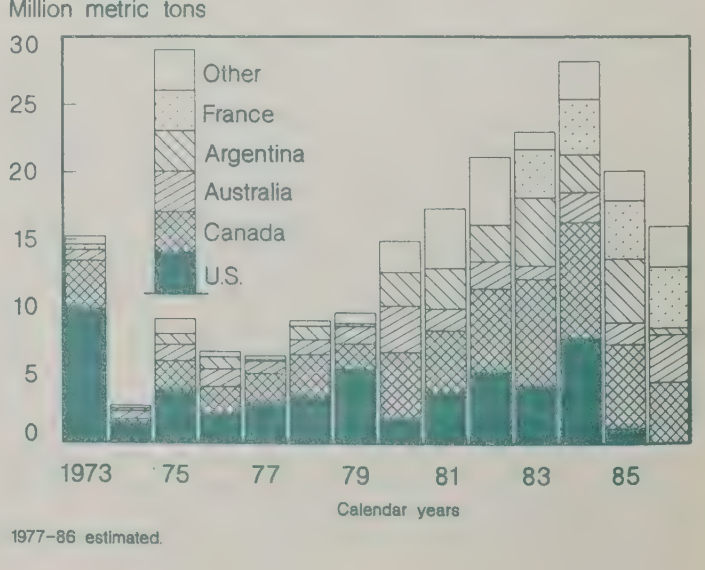


Figure 10
USSR Wheat Imports



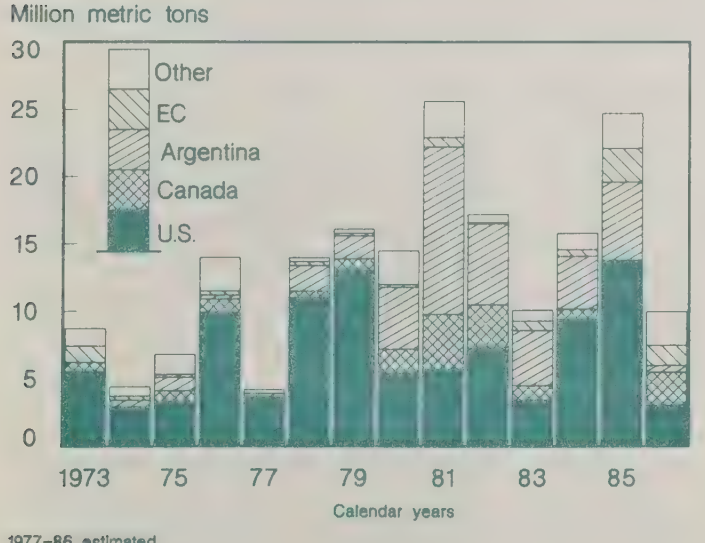
1977-86 estimated.

The USSR purchased milling quality wheat from the EC and Argentina at a highly subsidized price of $75–$80 per ton, the same range as corn, and likely used it for feed in place of corn. This fits the traditional Soviet pattern of feeding wheat. Moreover, of the 16–17 million tons of wheat the Soviets are expected to import in 1987, an estimated 25 percent is feed quality, an unusually high volume. Again, in sharp contrast to the more traditional wheat–corn price relationship, feed quality wheat has been priced considerably below corn, selling in some cases for as low as $50 per ton.

It is also plausible that the Soviets, after sharply reducing stocks during the U.S. grain embargo, have placed a priority on stockpiling wheat. USDA estimates that the Soviets have added 22 million tons of wheat to stocks beginning in 1982/83. Other speculation about the general paradox in Soviet grain buying this year has centered around the possibility of enormous winterkill, more extensive radiation contamination caused by Chernobyl, underestimated dockage and waste of grains, and a redefinition of the total 1986 grain crop makeup to include previously excluded crops.

Coarse grain imports in 1987 are estimated above the 1986 level, a puzzling phenomenon since the 1986 coarse grain harvest was the second best ever, the forage crop was a record, and hard currency earnings were down (figure 11). In 1986, coarse grain imports plummeted about 60 percent to about 10 million tons from 1985's 24 million tons. The dramatic drop in 1986 imports resulted from the much improved 1985 grain crop. The unusually high 1985 imports were caused by the poor 1984 crop. Even with the sharp decline in imports the Soviets were able to add to grain stocks in 1986/87.

Figure 11
USSR Coarse Grain Imports



1977–86 estimated.

Possible reasons for the heavy Soviet purchasing activity this year include very attractive prices for corn and barley, increased feed usage, a severe 1986/87 winter, and the desire to continue to build grain stocks. Increased imports of corn are expected to account for most of the rise in coarse grain imports in 1987, likely due to the poor 1986 corn harvest and very competitive corn prices offered by the United States and Argentina.

U.S. Pact Disregarded Again in 1985/86

The USSR failed to live up to the U.S.–USSR Long Term Grain Agreement for the second successive year in 1985/86. Failing to meet the minimum purchase of wheat required under the terms of the agreement, Soviet purchases totalled a token 153,000 tons from October 1985 through September 1986, the least imported since the first agreement began in 1976 (table 25). The Soviets did, however, buy 6.81 million tons of U.S. corn during the 1985/86 agreement year and 1.52 million tons of soybeans.

Table 25--U.S. grain sales to the USSR

Year 1/	U.S. offer to sell	USSR purchases from U.S. Wheat	Corn	Total
		Million tons		
1976/77	2/ 8	3.1	3.0	6.1
1977/78	15	3.5	11.1	14.6
1978/79	17	4.0	11.5	15.5
1979/80	3/ 25	2.2	5.8	8.0
1980/81	14	3.8	5.7	9.5
1981/82	23	6.1	7.8	13.9
1982/83	23	3.0	3.2	6.2
1983/84	22	7.6	6.5	14.1
1984/85 4/	22	2.9	15.8	18.6
1985/86	22	0.2	6.8	7.0
1986/87 5/	NA	1.0	3.6	4.6

NA = Not available. 1/ Grain agreement year -- October/September. 2/ Soviets were also told that the 1976 U.S. grain crop could meet needs in excess of this. 3/ U.S. offer later withdrawn. 4/ Total does not add due to rounding. 5/ As of May 12, 1987.

The Soviets contended that U.S. wheat was not competitive with world market prices, which they interpret the agreement as stipulating. The United States, however, interprets the agreement as meaning prevailing prices on the U.S. market. The Soviets also argue that total purchases of U.S. grains over the past years have more than satisfied minimum total purchase requirements, while U.S. officials assert that the agreement specifically states minimum sales by grain type.

Despite the lower U.S. grain prices and the devaluation of the dollar in 1986, U.S. grain still remained above the subsidized prices of competitors. To further redress the imbalance, the United States included the USSR in the Export Enhancement Program (EEP) in August 1986. Hoping to stimulate Soviet purchases of the 3.85-million-ton balance of the required 4-million-ton minimum, the U.S. offered a $15 per ton subsidy on wheat, an increase from the original $13 per ton subsidy. This reduced the going price of U.S. wheat to about $86 per ton.

The Soviets, however, chose not to take the concessionary offer in light of the availability of wheat and corn from other origins at rates subsidized well below even the improved U.S. bonus price. Within the EC, high quality wheat in many cases was selling for about $80 per ton FOB and feed quality wheat at about $50 per ton. Argentina sold wheat to the USSR just above $80/ton FOB. Taking these prices into account, the U.S. wheat price subsidy would have had to reach at least $20 per ton to compete with EC and Argentine exporters. Although published export price quotes for Canadian and Australian wheat are consistently rather high, wheat sales from both countries are regularly contracted for less. In some cases, the Soviets may be importing milling-quality wheat for use as feed because of its relatively low price.

Soviets Accept Wheat Bonus in 1987

In early 1987, the U.S. renewed efforts to make U.S. prices competitive to the USSR by again including the Soviet Union in EEP. Hoping to induce the Soviets to meet the 4-million-ton purchase requirement for the 1986/87 agreement year, the United States offered the USSR an export bonus on that amount. On April 30, 1987, USDA announced that the Soviets had agreed to import the grain at competitive prices by September 30. The 950,000 ton sale announced on May 7 was the first major purchase of U.S. wheat by the USSR in 2 years and the largest sale of subsidized U.S. wheat to an individual country.

Imports High Despite Output Rise

Soviet grain imports in the July 1986/June 1987 marketing year will likely be close to the 30 million tons imported in 1985/86. Imports in July/December 1986 were more than a third below the same period in 1985. Imports in the first half of 1987 are an estimated 20 percent above 1986 levels. The higher imports in 1987 are perplexing in light of the large increase in Soviet grain production and the record forage harvest in 1986. However, behind the situation are improvement in the terms of trade by late 1986 and early 1987, a lower-than-anticipated Soviet hard currency shortage, the very cold 1986/87 winter, and the drive for increased meat production.

Imports in the second half of 1987 will largely depend on the 1987 grain and forage crops. However, the Soviets could draw down substantially on stocks to cover any shortfall. USDA, using its historical approach to estimating Soviet grain disappearance (admittedly built on fragmentary data), estimates that Soviet grain stocks have increased 39 million tons beginning in 1982/83. Even if the 1987 crop is close to last year's, Soviet import requirements in 1987/88 could fall below those in the last half of 1986. If the pattern of 1986 holds, the hard currency constraint may be less influential than expected in restraining grain imports.

New Contract Terms to Improve Quality

At a time of reduced hard currency supplies and fierce competition for its market, the Soviet Union announced in July 1986 that it would seek stricter controls on sales contracts with grain exporters, likely as a new means to cut import costs. The three new conditions included the Soviet right to reject cargo at the point of loading if it does not conform to contractual agreement, the imposition of a financial penalty for grain with infestation or foreign objects in it, and payment of only 95 percent of the purchase price up front, with the rest at time of

unloading. The Soviets additionally wanted to return grain at the shipper's expense if it did not meet requirements upon arrival in the USSR.

Although exporters rejected outright the new Soviet proposals, it is not clear to what extent any compliance has occurred. Some analysts believe that Australia, Canada, and Argentina are in a better position to accommodate the new demands than the United States, even to the point of using compliance as a form of nonprice competition.

U.S. May Replace Canadian and EC Grain

The U.S. share of the Soviet import market in 1987 may more than double 1986's estimated 12 percent and approach 1985's 35 percent to make the United States the single largest supplier of grain to the USSR. The United States lost market shares in 1986 as the EC and Canada each held about 25 percent. USDA's April 1987 announcement that the Soviets would buy at least 4 million tons of wheat by September 30 contrasts with no U.S. wheat sales in 1986. The United States held roughly 7 percent of the Soviet wheat market in 1985 and nearly 30 percent in 1984. In coarse grains, the United States should maintain at least its 1986 share of 30 percent this year, but is unlikely to regain the nearly 60 percent held in 1985.

Canada, which has an agreement with the USSR calling for export of 25 million tons of grain between 1986 and 1991, may hold about a 25-percent share of the Soviet wheat imports in 1987, down as the result of increased U.S. sales from the roughly 30 percent held in 1985 and 1986. Analysts have suggested that some of Canada's wheat has been artificially downgraded to hide the effective level of price subsidies. The Canadian share of the Soviet coarse grain market is projected to decline by about half in 1987--from the high in 1986 when it absorbed much of the U.S. share--to just above 10 percent.

France remains the largest EC wheat supplier to the USSR, possessing an arrangement that specifies annual trade of 1.5-3.0 million tons. The French share could drop to under 25 percent in 1987 from almost 30 percent in 1986. The EC share of the coarse grain market, primarily barley, in 1987 is expected to stay at about 15 percent, the same as in 1986, but above its 1985 share of about 10 percent.

The Soviets maintain a 5-year agreement (1986-1990) with Argentina calling for annual sales of 4 million tons of coarse grains. They were able to persuade the Argentines in 1986 to count wheat and soybean purchases toward the agreement, after failing to abide by its original commitments. The Argentines, in turn, were able to get the Soviets to increase grain purchases after committing to improve the sizeable trade deficit with the USSR. Holding about 3 percent of the Soviet wheat market in 1986, Argentina is expected to increase its share in 1987, but not reach its above average 1985 share of about 20 percent. Argentina may increase its share of the coarse grain market in 1987 to just below 15 percent, up from its 5 percent share in 1986.

Australia's share of the wheat market, which rose from about 10 percent in 1985 to over 20 percent in 1986, may be more than halved in 1987. A larger U.S. share is expected to account for much of the drop.

A trade protocol requires the Soviets to buy 7 million tons of PRC corn over 1986-90. The PRC has become a very important supplier of coarse grains to the Soviets. For political and economic reasons, the Soviets are likely to turn increasingly to the Chinese to diversify grain sources and perhaps more importantly as a way to conserve hard currency. *(Christian J. Foster)*

Livestock Trade Stable

The value of Soviet livestock product imports in 1986 likely fell below $2 billion for the first time since 1979, but remained close to the amounts for 1984 and 1985. The need to reduce hard currency expenditures on agricultural products has not carried over strongly into livestock products. Nearly 70 percent of Soviet meat imports are traded on a bilateral basis with CMEA countries and the PRC. Meat imported from the West--primarily Western Europe and New Zealand--is low quality and purchased at very advantageous prices. Given the great demand for meat, the Soviets consider these imports a

reasonable means of bolstering domestic supplies.

In recent years, most of Soviet butter imports have come from Western Europe and New Zealand. Excess demand exists for milk and milk products in the USSR. Given the prices offered by exporters, it has made sense for the Soviets to devote a larger share of their domestic production to whole milk products, and augment butter supplies through imports. With the EC now offering tremendous subsidies on "old butter", the Soviets will gladly make use of this trade opportunity. They bought 300,000 tons from January through April 1987.

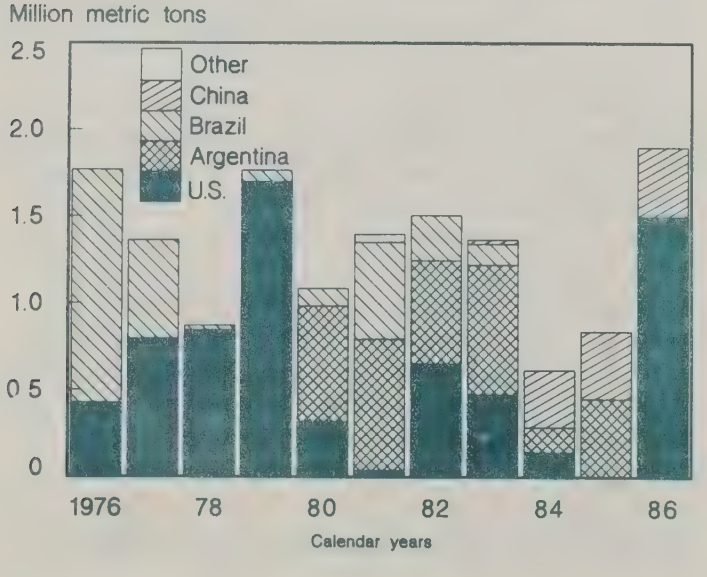
The Soviets continue to pay good prices for wool imports. Nearly three-quarters come from Australia and New Zealand, 15 percent from South America, and 10 percent from Mongolia and Afghanistan.

Soviet livestock product imports are expected to stay close to $2 billion this year. The Soviets will likely continue to respond to lower prices, but not increase hard currency outlays. *(Edward Cook)*

Soybean Imports Down in 1987

Soviet imports of oilseeds are expected to fall in 1987 after substantial growth in 1986 (figure 12). The decline may be attributed to increased supplies of grain for feed and roughage crops, limited availability of hard currency, and higher world market prices for oilseeds relative to grains. Even with chronic protein feed shortages, there is no reason to expect the Soviets will change the current low priority given to oilseed imports, particularly if hard currency supplies remain tight. Soviet oilmeal imports, on the other hand, are projected to rise somewhat, and imports of vegetable oil are expected to increase in 1987 following reduced imports last year and depleted domestic oil stocks.

Figure 12
USSR Soybean Imports



Soybean imports in 1987 may fall to 1.0 million tons from about 1.9 million in 1986. U.S. soybean exports, which totalled 1.5 million tons and comprised almost 80 percent of total Soviet soybean imports last year, could drop off completely this year as they did in 1985. While soybeans are included in the U.S.-USSR Long Term Grain Agreement, no minimum purchase level is stipulated. The Soviets continue to be reluctant to increase their import dependence on soybeans, particularly since it is a commodity still dominated by the United States. Some speculation exists that the Soviets imported U.S. soybeans last year only to "fulfill" the agreement and that further sales may not occur again soon.

Argentina, the PRC, and Brazil are expected to account for the bulk of Soviet soybean imports in 1987. The USSR has long-term supply agreements to buy a minimum of 500,000 tons of soybeans annually (1986-90) from Argentina and 2.6 million tons over 1986-90 from China. In the past, the USSR has failed to meet part of its commitments with Argentina, explaining that Argentina was not doing its share in balancing overall trade. This year, however, the agreement may be met since Argentina has begun narrowing its trade surplus and the USSR is now allowed to substitute purchases of soybeans with imports of oilseed products. An earlier soybean purchase agreement with Brazil (1982-86), which apparently lapsed this past year, went largely unfulfilled because the Brazilians were unable to supply corn to the USSR, and the Soviets chose not to fulfill the soybean import commitments.

Breaking with traditional buying patterns, the Soviets have purchased an estimated 200,000 tons of rapeseed, with the bulk coming from the EC at heavily subsidized prices. The

lower prices and the higher oil content of the EC rapeseed is believed to have motivated the Soviet move. Bumper rapeseed crops in the EC and Eastern Europe likely portend further Soviet imports.

Soviet soybean meal imports in calendar 1987 are projected to rise above the 1986 level of 600,000 tons, with Argentina and the Netherlands expected to supply the bulk, and Brazil possibly providing a small amount. The Soviets reportedly prefer Argentine and Brazilian meal because it has a higher protein content and is pelletized and thus easier to handle and store and has greater resistance to spoilage. U.S. soybean processing facilities do not currently pelletize meal. The Netherlands is believed to be willing to provide small shipments at prices competitive with large orders from other suppliers, which also helps the Soviets deal with their distribution difficulties.

The Soviets have avoided the U.S. soybean meal market since the 1980 embargo. However, the United States continues to benefit from the large exports of soymeal from the Netherlands, which buys about 90 percent of its soybeans from the United States.

Soviet imports of vegetable oil are expected to increase in 1987, perhaps to 900,000 tons, despite the good sunflowerseed crop and well above average domestic output of vegetable oil in 1986. Depleted stocks of oils and fats due to increased domestic consumption and reduced vegetable oil imports last year account for the projected rise in oil imports. The USSR, one of the world's leading importers of vegetable oils, gets the bulk of its supplies in the form of soybean oil from Argentina and Brazil, sunflowerseed oil from Argentina, palm oil from Malaysia, and rapeseed oil from the EC. The Soviet Union did not import any U.S. vegetable oil in 1986 compared to 39,500 tons of soybean oil and 41,375 tons of sunflowerseed oil bought in 1985 and 1982. The sale of about 300,000 tons of butter from EC stocks this year is likely to affect total Soviet oil import needs. *(Christian J. Foster)*

Cotton Imports Up Sharply

Soviet cotton imports in 1986/87 are estimated at 1 million bales, 55 percent greater than 1985/86. Meanwhile, 1986/87 exports may drop 7 percent to 2.8 million bales. Nearly 87 percent of the exports are destined for socialist countries under long-term agreements. While Soviet import needs are greater than in 1984/85, when the United States is estimated to have accounted for 45 percent of their imports, U.S. sales in 1986/87 are not likely to be as significant. Soviet purchases from the United States have generally consisted of California cotton, which is reportedly sold out. In the quantities the Soviets would require, only Memphis cotton is available, not their first choice so they are likely to look elsewhere first.

In 1986/87, China and India are expected to be the largest suppliers of cotton to the Soviets, at 19 and 20 percent. Egypt and Syria are expected to be major sources with 7 percent each, somewhat diminished from 1985/86. As of the middle of March, the Soviets had not purchased the majority of their estimated import needs. Furthermore, the Soviets want to economize on hard currency expenditures and are searching for exporters willing to enter into barter arrangements for cotton. *(Robert Koopman)*

Sugar Import Needs Remain High

As the anti-alcohol campaign continues, demand for sugar, an important ingredient in non-alcoholic drinks and moonshine, will likely keep Soviet imports high in 1987. Raw sugar purchases for 1986 are estimated to be up 15 percent from 1985, with three-quarters of the total coming from Cuba. Over the past 10 years, 60 to 95 percent of Soviet raw sugar imports were Cuban, paid for in soft currency at prices 3 to 4 times higher than the market price. The high price tag on Cuban sugar makes Soviet unit values an anomaly, with raw unit values 1.5 to 4 times higher than refined.

In 1986, free market purchases were also up, although Soviet hard currency constraints prevented them from reaching the record levels of the early 1980s. In 1987, Cuba and Brazil continue to have trouble meeting sugar export commitments, but Cuba is more likely to try to fulfill its Soviet contracts. For the remainder of its import needs, the Soviets will probably rely more on Australia, Thailand, and other free-market suppliers. In March 1987, the Soviets for the first time signed a sugar

contract with the Dominican Republic, a traditional U.S. supplier. *(Carolyn Duff)*

SOVIET INTENSIVE TECHNOLOGIES IN THE 1980'S

In the mid-1960's, the Soviet Union accelerated its modernization of agriculture, primarily by increasing industrial inputs, on-farm construction, and land improvement work. In the last 20 years, the Soviets have been largely successful in achieving these goals. Roughly 75 percent of current livestock housing in the socialized sector was added since 1965, the amount of fertilizer annually delivered to farms increased four-fold, total tractor horsepower increased three times, and the amount of irrigated and drained land more than doubled. The modernization did not translate into production increases. The value of gross agricultural production grew by slightly more than 50 percent between 1965 and 1985, and the size of the agricultural labor force declined by only about 10 percent.

Continued rapid expansion in agricultural investment, which offers only modest growth in labor productivity and production, is an increasingly untenable strategy. Agriculture's share of total investment has crept up in the last 20 years and now amounts to 27-28 percent. Furthermore, with the slowdown in economic growth in the last 10 years, past rates of total investment growth cannot be easily sustained. In recent years, Soviet planners have been shifting attention away from crude input quantity measures and concentrating on the quality and coordination of inputs in the production process. The new emphasis has been labeled intensive growth strategy. This entails more direct links between scientific-technical advances and the agro-industrial complex and greater attention to specific production requirements at the local level. What the Soviets have in mind is adopting modern agricultural practices in a systematic way. By successfully implementing these principles, they hope to make more efficient use of existing production potential and achieve their output goals without rapidly increasing agricultural investment.

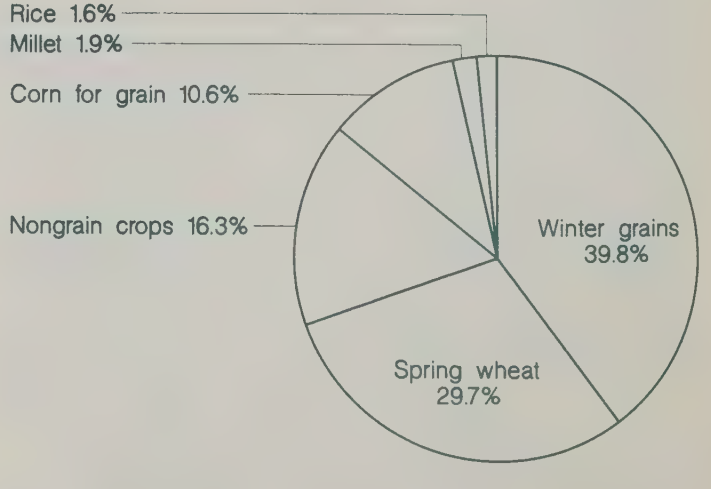
Steps to intensify production have been implemented in both the crop and livestock sectors, but most attention lately has been devoted to the former.

Intensification of Crop Production

The foundation of the current intensification drive in crop production was laid in the late 1970's when increased emphasis was placed on development of zonal-based agricultural systems. These were meant to adapt crop rotation and cultivation practices appropriate to local soil and climate conditions. In conjunction, programs were developed to ensure the supply of all requisite inputs and were meant to fully mechanize production of a number of row crops, including sugarbeets, sunflowers, and corn. These programs were labeled "industrial crop technologies." In 1979, they were introduced on 271,000 hectares and expanded rapidly (figure 13). By 1985, about 80 percent of corn, two-thirds of soybeans, over 70 percent of sugarbeets, and more than 40 percent of sunflowerseed area were under these programs.[33]

In the last 3 years, new programs, labeled intensive technology, have been developed and widely implemented in grain production. In 1985, intensive technology covered 10.5 million hectares of spring wheat and 6.4 million hectares of winter wheat (figure 14). In 1986, the program was expanded to over 15 million hectares of winter grains, 10.9 million hectares of spring grains, plus 3.9 million hectares of corn for grain was shifted from industrial crop technology to intensive technology. The Soviets frequently combine the grain and row crop programs under the

Figure 13
USSR Crop Area Under Intensive Technology, 1985



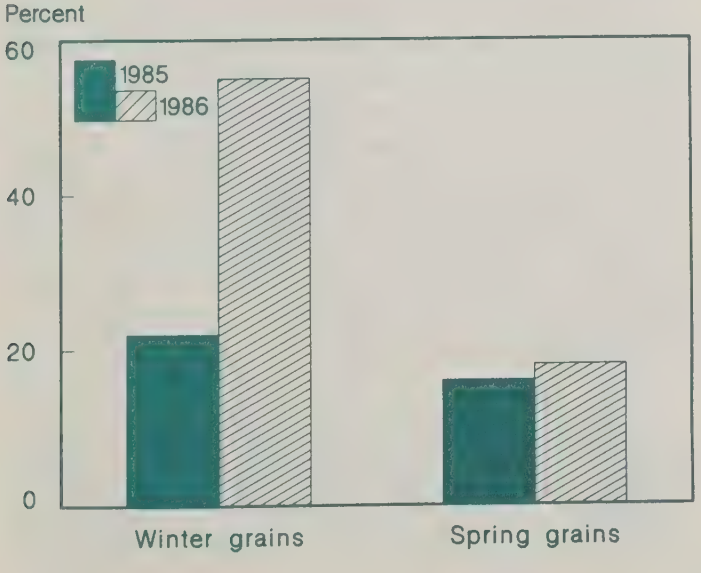
heading intensive technology and they will be treated as equivalent in this article.

The intensification programs for crops require improved methods of plant growing, such as closely matching crop varieties and cropping practices with soil, water, and climatic characteristics of particular zones at any given stage of growth. Specifically, the new policy calls on farms to introduce effective methods of crop rotation, soil treatment, fertilization, and plant protection. A key requirement is precise execution of all technological operations from soil preparation to harvesting.

These programs require appropriate inputs of adequate quality. Without a carefully selected array of fertilizers and effective chemicals against weeds, pests, and plant diseases, intensive technologies will not bring projected results. Introduction of fertilizers should be part of a continuous schedule of tasks carried out with appropriate machinery. According to Soviet plans, one extra kilogram of fertilizers, together with pesticides and other chemicals, should yield on the average 7 additional kilograms of grain.[34]

The amount of fertilizers to be used depends on such factors as climatic zone, land conditions, and availability of soil nutrients. For example, in the steppe areas of Siberia and northern Kazakhstan, with annual precipitation of only 300–350 mm, 60–80 kilograms of fertilizers per hectare of grain (the maximum amount) yield just 18–25 quintals. In the moist zones of the European USSR, these amounts must be increased to 300–350 kilograms per hectare to obtain 45–50 quintals.[35]

Figure 14
USSR Grain Area Under Intensive Technology



Intensive technologies can be effective only with continuous anti- erosion efforts and gypsum and lime treatment on soils that need them. The new policy also requires a sound and well thought- out selection of highly productive varieties of high- grade seeds, as well as technologies appropriate to the seed varieties. Optimal results can be obtained with a proper choice of crop predecessors. For a large portion of intensive technology fields, particularly spring grains, crops are to be sown following clean fallow. Where this is not possible, appropriate predecessor crops have been identified.

Successful implementation of intensive technologies is impossible without quality farm management and skilled labor. It is essential to provide appropriate training throughout the system, from farm leaders and specialists, to team leaders and equipment operators. It is equally important to provide incentives to workers to accurately carry out field operations. In the past, workers were paid on a piece rate system--so many rubles per hectare of fields plowed, for example. This led workers to be interested in the speed and not the quality of the work. Collective contracts represent some possible improvement. A collective contract is an agreement under which the farm management provides all inputs for production and a group of workers pledges to produce a specified amount and quality. Because distribution of wages to individual workers is determined within the team or brigade (given a total wage fund constraint), income should more accurately reflect the individual contribution of each worker to final output.

IT on Crops Implemented as Planned?

Intensive technologies for crops were started apparently with good farms and in the areas with near optimal conditions in terms of soil quality and infrastructure. The new system will inevitably spread to less favorable lands that suffer from salinity, acidity, erosion, and lack of humus and phosphorus, and to farms with poor management and labor.

In 1985, intensive methods were used on 23.8 million hectares, of which the small grain area comprised 16.9 million, corn-for-grain over 3 million, sugarbeets 2.3 million, and sunflowerseeds 1.2 million. In 1986, the area under intensive practices reached 37 million hectares, including small grains on 27.1 million, corn-for-grain on 3.9 million, and other crops on roughly 5-6 million hectares.

If the program remains sufficiently small, areas included could be given high enough priority to meet many of the requirements of intensive agriculture at the expense of farms outside the program. For the program to work over wide areas, significant improvement in how input industries operate is required. The most important change would be increased responsiveness to the need of farms for a wide variety of high-quality inputs. Improvements in the distribution network to insure the timely delivery of inputs would be essential. Also needed is extensive retraining of workers and improved links with regional research institutes to provide the type of extension service information long lacking in Soviet agriculture. Farm managers would have to be free of traditional petty interference from regional and oblast hierarchies to deal with local conditions in a flexible manner.

There is little indication that these conditions are being satisfied. Farmers and agricultural specialists continue to complain about shortages of machinery suitable to intensive methods and the low standards of equipment. Only 60 percent of appropriate machinery is available on farms that produce grains, sugarbeets, sunflowerseeds, and soybeans. *Izvestiya* says that because of this problem, corn yields in many areas were higher before the introduction of intensive technologies than afterward.

Farmers often have to modify the equipment locally, which does not always make it more efficient. On January 17, 1987, *Izvestiya* reported that a lack of machinery for fertilizer application and plant protection led to aerial application of chemicals or their uneven application on fields. Furthermore, there is virtually no equipment in the Soviet Union for applying fertilizers at the root.

A continuing problem is the supply of quality mineral fertilizers, pesticides, and lime, as well as organic fertilizers. Academician A. Nikonov stated that intensive technologies still have not achieved the expected effect.[36] Complaints also continue to surface about unjustified interference by planners in farm management.

As the intensification expands, increasingly less fertile land will be included. The Soviets currently face a number of serious soil management problems that might constrain expansion of intensive programs. Over 23 percent of total arable land in the country and about 50 percent in the Non-Black Soil Zone has a humus content of less than 2 percent.[37] This problem is made more serious because most Soviet agricultural lands have experienced a continual decline of humus, and organic fertilizer currently compensates for only half of the loss.[38]

In general, 40 percent of Soviet plowlands have very poor phosphorus content. In Kazakhstan and in the eastern regions of Russia alone, 27 million hectares of grain land are short of phosphorus fertilizers. A lack of phosphorus significantly decreases efficiency of nitrogen and potassium.[39]

Soviet authorities are increasingly concerned about the inadequate levels of liming on acid soils, gypsum treatment of saline lands, and anti-erosion efforts that hamper the progress of an intensification technologies policy. In the USSR, more than 51 million hectares of arable lands are acidic. Lime treatment of 160 million tons should be provided on 17 million hectares annually; however, actual deliveries are only one-third this level.[40]

The success of intensification programs in crop production also depends on irrigation and drainage networks. But the Soviet situation in this respect is far from satisfactory. About two-thirds of irrigated land is served by surface systems with a consequent waste of water resources, rising amounts of underground water, flooding, and salinization. In 1975, 4.8 million hectares of irrigated lands needed improvement; in 1985, this number increased to 5.6 million.

Total area of eroded arable land or that in serious danger of erosion is now 152 million hectares. Gully formation is increasing by 100,000 hectares annually. As a result of

erosion, about 50 million tons of humus is washed out of arable lands yearly.

Intensive crop production is a demanding program for the Soviet economy to master. But movement in that direction clearly makes sense given the obvious need for more efficient utilization of resources. Within the confines of the problems discussed, some increase in crop production could be achieved, at least in the early stages of implementation, by a simple reallocation of inputs among farms.

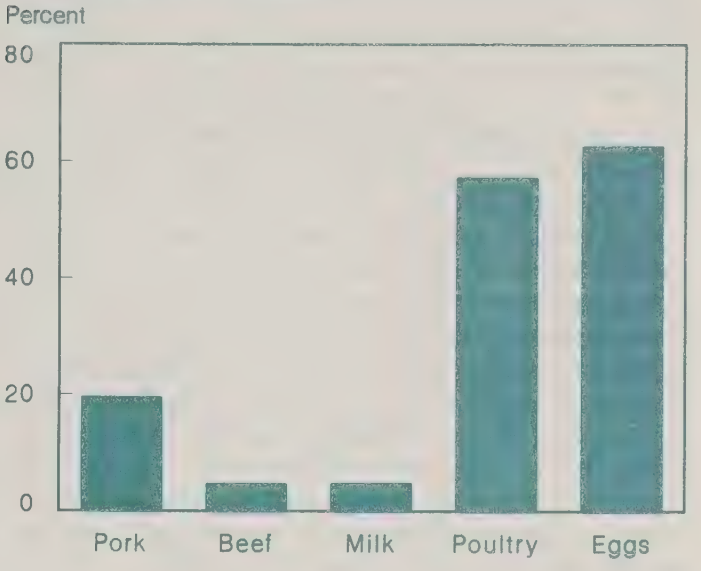
Between 1980 and 1985, fertilizer applications on grain increased 40 percent, with no apparent impact on yields. Numerous Soviet articles describe increased fertilizer use contributing to excessive weediness of fields, largely because of a lack of appropriate agricultural chemicals. What the intensification drive is probably doing is concentrating available fertilizer and chemicals on specified fields, most likely those with the best farm management and higher natural yield potential. This entails denying resources to less efficient or less productive farms, a change from the Brezhnev-era policy of spreading resources around. A reallocation could have a positive impact even though important elements of the intensification program, including improved quality of inputs, would not be met.

Intensification of Livestock Production

The basic management idea behind livestock intensification is specialization of production by type at the farm level. The model for this specialization remains the industrial livestock complexes, which have been in the implementation stage for roughly 20 years.[41] The complexes differ from traditional State and collective farms by being generally larger operations, nearly fully mechanized, and with priority access to industrially supplied inputs, particularly mixed feeds.

Industrial-type livestock raising has had its most significant impact on poultry meat and eggs, accounting for over half of total Soviet production of both (figure 15). The complexes account for about one-fifth of Soviet pork, but only about 5 percent of beef and milk.

Figure 15
USSR's Share of Livestock Production from the Industrial Complex



With the exception of dairy complexes, the economic performance of industrial livestock operations is officially claimed to be much better than traditional livestock methods, with higher capital investment being more than offset by increased labor productivity and better feeding efficiency.[42] It's not clear how much these claims may be skewed by a combination of underpriced capital and priority access to inputs. Complaints continue to be made about the unjustifiably high capital intensity of many of these livestock operations.[43]

The livestock complexes are far from self-sufficient in feed supplies. They rely on the State, particularly for grain, which has contributed to larger imports and acted as a brake on expansion.

Some of the specialization principles of the complexes are planned for normal State and collective farms. One example of this is breaking down the production cycle into various stages. For example, feed and care will be differentiated by age of the animal. As in intensive crop production, such a principle seems a basic tenet of modern agriculture, but one which is still awaiting implementation on many farms in the USSR.

Emphasis may also be placed on increased production specialization by animal type on normal State and collective farms, and a pooling of livestock for finishing in inter-farm

livestock associations, particularly in those regions which are self-sufficient in feed.[44] In the past, increased specialization has been stymied by planning directives that forced farms to produce a wide spectrum of livestock products, financial support programs for high cost farms, and an inadequate marketing structure.

Intensification of livestock production means not only changes in management, but also using scientific and technical advances. In both areas, local agricultural research institutes are to provide more assistance to farms. In recent years, "systems" of livestock raising have been developed at the regional level which take local characteristics into consideration. An important aspect is coordination of livestock raising with capital availability and a coherent feed management strategy.[45] For such schemes to be effective, an appropriately skilled management and labor force at the farm level is required, something that remains lacking.

Other scientific advances are being pushed nationwide as part of livestock intensification. An important area is breeding work. Efforts are underway to increase the share of Holstein-Friesian mixes in cow inventories. Their share has increased from 3.5 percent of socialized sector cow inventories in 1984 to 15 percent in 1986.[46] The share of improved swine hybrids in the socialized sector has also increased dramatically since 1984.[47] Much of the breeding work is aimed at developing animals better suited to confined, industrial operations.[48] This is a serious problem in dairy complexes.[49]

Another critical area for livestock intensification is more efficient machinery. Last year the Minister of Machine Building for Animal Husbandry and Fodder Production was fired despite a strong uptrend in the gross value of machinery produced. The likely cause for his dismissal was the failure to produce new machinery called for in plans and failure to increase the quality of current machinery. Extensive plans exist for more efficient machinery for feed and livestock production.[50] However, such plans are not new and there is no evidence of significant progress.

Is Intensification Working?

The impact of these various intensification measures on agricultural production is difficult to assess. Certainly 1986 was a very favorable year for agriculture, with output up 5.1 percent. Labor productivity in the socialized sector grew nearly 7 percent and capital productivity most likely increased, representing a break in what had been a strong downtrend. Are these results a 1-year aberration or do they signal a permanent shift? The 1986 results should be evaluated in the context of 1984 and 1985. In those 2 years, gross agricultural output remained roughly unchanged from the 1983 level. This would indicate that a healthy yearly increase in output was due. Moreover, a lot of the intensification measures discussed were introduced in 1984 and 1985 without any measurable impact on gross agricultural output.

The impact of the intensification efforts is impossible to separate from the effects of Gorbachev's broader management changes, including the reorganization of the Ministry of Agriculture and related ministries, development of regional agro-industrial associations, and the labor discipline and anti-alcohol campaigns. Agricultural performance in the last 2 years has also been influenced by these developments.

Whether intensification is working hinges not only on production results, but also on the costs of these programs. Soviet specialists have stated that for intensification of grain production to be economically viable, yields need to increase generally by 50 percent. If the program is given high enough priority, however, its expansion will be ensured by planners regardless of its impact on farm profitability.

Evidence from the livestock sector indicates that the intensification efforts have had a positive impact. In the last 5 years, milk and egg yields and meat production per head for hogs and cattle have improved. These increases were particularly strong in 1986. Breeding work has almost certainly been a contributing factor, particularly for cows, as has improvement in the quality and quantity of roughage feeds. During the last 5 years, the uptrends in cost of production for major livestock products have slowed little.

The evidence from the crop sector is harder to assess. The strongest piece of evidence for the positive impact of intensification on crop production is the 1986 grain crop. The 210 million tons produced exceeded virtually all weather-based estimates of the crop by 15–35 million tons. Particularly surprising was winter wheat production, which was thought to be damaged by spring dryness. Excluding corn, winter wheat was the grain with the highest proportion of area under intensive programs in 1986.

An important contributor to the 210-million-ton crop was spring grain production in the New Lands. The area of grain under intensive programs in the New Lands increased only modestly between 1985 and 1986, so much of the increase in production should be attributed to better weather conditions, unless intensification efforts were carried out much more effectively in 1986. In fact, a report in early summer spoke of the New Lands having the best soil moisture reserves in years.[51] Intensification efforts were also not sufficient to maintain corn yields in the face of summer drought, though virtually all the crop was under the program.

One way to assess the 1986 grain crop is to analyze trends in input availability. In 1985 (latest data for machinery), compared with the 1976-80 average, tractor numbers were up 30 percent and grain combines were up 19 percent. Fertilizer use on small grains was up a whopping 46 percent. However, grain yields in 1985 rose a mere 1 percent, the only year in the 1981-85 period to exceed the 1976-80 average. This is stark evidence of declining returns to capital in grain production.

In 1986, fertilizer use on small grains increased a further 20 percent. Based on the recent record, this alone would not be sufficient to guarantee higher yields. But if Gorbachev was successful in reallocating resources--at more effectively combining available inputs- the 1986 grain harvest should be viewed as successfully harnessing production potential that had been building for 5 years or more. There is evidence of a significant shift in fertilizer supplies onto intensive grain fields between 1985 and 1986, which may have contributed to the higher yields.[52] In this case, much of the more elaborate requirements of intensive grain production could go unmet, but output would still increase. An input reallocation strategy could achieve a single-year jump in production, but without continued large increases in key inputs such as fertilizers would not easily form the basis for a more rapid long-term growth rate in yields.

Although the Soviets claim that intensive programs added 16 million tons to grain production in 1985 and 24 million tons in 1986, the levels were probably much less. At the regional level, comparisons probably are made for yields on intensive and nonintensive fields. Because fields with higher natural yield potential are included in the intensive program, there is a built-in gain attributed to the technology. A true measure would compare yields on intensive fields with an estimate of what those fields would have yielded otherwise.

Intensification efforts have been underway for other crops for a number of years, with no obvious improvement in yields. In 1976-80, sugarbeet yields averaged 23.6 tons per hectare, and those for sunflowerseed 1.19 tons. In 1981-85, despite the intensive programs, sugarbeet yields fell to 21.8 tons and sunflowerseed remained unchanged. Average annual cost of production increases for these two crops during the first half of the 1980's were slightly smaller than in 1976-80.

Grain intensification has been underway on a large scale only since 1985. During 1981-84, the USSR did not publish cost of production data for grain, so a comparison with 1985-86 is not possible. Statements from various regions of the USSR are conflicting concerning the economic efficacy of the grain program. If intensification of grain production remains primarily a reallocation of available inputs rather than a large net increase in input use, the uptrend in costs of production might slow. This is assuming that the reallocation of inputs is carried out on economically reasonable grounds.

Intensification As a Campaign

Agriculture in the Soviet Union has been periodically absorbed by campaigns. They usually originate with a reasonable idea, but

are then over-generalized by planners and forced on large parts of the country. The attraction of campaigns is that they seem to offer simple and straightforward means of achieving progress. An example of this would be Khrushchev's campaign to expand corn production in the late 1950's and early 1960's. A more recent example is the nationwide institution of agro-industrial associations (RAPO's) in 1982-83.

Campaigns tend to simplify real problems and ignore barriers to successful and widespread implementation. In the early stages, the success of a campaign program is assumed and the task is to propagandize the benefits. In the maturing phase, critical comment is allowed. Finally, a campaign is either abandoned, as in the case of Khrushchev's corn expansion, or superseded by a subsequent one, as with the RAPO's being overtaken by formation of Gosagroprom.

Is intensification of grain production a campaign? It shares a number of characteristics of campaigns. It is being directed from the highest levels and from the very early stages widespread expansion was preordained. Expansion is continuing despite a long list of supposed requirements for the program that are not in place. Intensification differs from previous campaigns in that it doesn't offer a simple solution to complex problems.

Some form of intensification in Soviet agriculture is necessary if long-term targets are going to be reached. The question is what form that intensification will take. Are current programs adequate or will more ambitious systemic changes, as occurred in China in the late 1970's, be required? Short term gains are possible from more efficient distribution of resources and this probably played a role in last year's grain crop. The intensification programs also contain a number of other aspects which should contribute to moderate growth over the longer term. Many of these have to do with better linkages between agricultural sciences and farming.

The intensification programs will not live up to their full potential (i.e. emulation of modern agricultural practices) however, without systemic changes in how input industries and farms operate. Input industries need to be made truly interested in the needs of farms. Farms need to be given the freedom and incentive to deal appropriately with specific local conditions and to insure that all the complex pieces of the intensification puzzle come together effectively.
(*Edward Cook and Yuri Markish*)

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